

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 1 031 571 A1

(12)

## EUROPEAN PATENT APPLICATION

published in accordance with Art. 158(3) EPC

(43) Date of publication:  
30.08.2000 Bulletin 2000/35(51) Int. Cl.<sup>7</sup>: C07D 403/06, C07D 403/12,  
C07D 471/04, A01N 43/653,  
A01N 43/84, A01N 43/90

(21) Application number: 96950362.8

(86) International application number:  
PCT/JP98/04808

(22) Date of filing: 23.10.1998

(87) International publication number:  
WO 99/21851 (06.05.1999 Gazette 1999/18)

(84) Designated Contracting States:

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE

(30) Priority: 24.10.1997 JP 29239997

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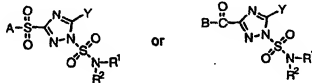
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(54) SULFAMOYL COMPOUNDS AND AGRICULTURAL OR HORTICULTURAL BACTERICIDE

(57) A sulfamoyl compound of the general formulae (1):



wherein

R<sup>1</sup> and R<sup>2</sup> are each independently C<sub>1-4</sub> alkyl, or R<sup>1</sup> and R<sup>2</sup> together are C<sub>4-6</sub> alkylene or C<sub>4-6</sub> alkylenedioxy,  
Y is H, halogen, C<sub>1-8</sub> alkyl, C<sub>1-8</sub> alkoxy, C<sub>1-8</sub> alkylthio, C<sub>1-8</sub> haloalkyl, C<sub>1-8</sub> haloalkoxy or C<sub>1-8</sub> haloalkylthio,  
A is a predetermined heterocyclic group,  
B is a predetermined heterocyclic group which is identical with or different from A,  
W is a chemical bond or O,  
V is O or S,

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D, E, F and G are each independently N, CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup> and R<sup>11</sup> are each independently predetermined group such as H, or an unsubstituted or substituted aliphatic, aromatic or heterocyclic group.

The sulfamoyl compound is useful as an agricultural and horticultural fungicide.

## Description

## TECHNICAL FIELD

- 5 [0001] The present invention relates to novel sulfamoyl compounds, and agricultural chemicals (insecticides, fungicides, herbicides, plant growth controlling agents and the like.), particularly agricultural and horticultural fungicides.

## BACKGROUND ART

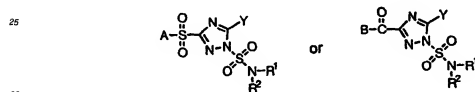
- 10 [0002] JP-A-3-170464, JP-A-6-32785, JP-A-7-2803 and JP-A-7-215971 describe that certain sulfamoyl compounds have bactericidal activities.  
 [0003] Even the compounds described in the above-described early publications are unsatisfactory in potency and residual effectiveness, thus developments of more useful agricultural and horticultural fungicide have been desired.

## 15 DISCLOSURE OF THE INVENTION

[0004] Under the circumstances, the present inventors have made extensive research with a view to developing excellent fungicide and, as a result, have found that novel sulfamoyl compounds have remarkable controlling activity as agricultural and horticultural fungicide, thus accomplishing the present invention.

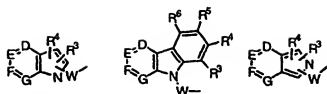
- 20 [0005] That is, the present invention relates to [1] to [38].

[1] A sulfamoyl compound of the general formulae (1):



wherein

- 35  $\text{R}^1$  and  $\text{R}^2$  are each independently  $\text{C}_{1-4}$  alkyl, or  $\text{R}^1$  and  $\text{R}^2$  together are  $\text{C}_{4-5}$  alkylene or  $\text{C}_{4-6}$  alkyleneoxy.  $\text{Y}$  is H, halogen,  $\text{C}_{1-3}$  alkyl,  $\text{C}_{1-3}$  alkoxy,  $\text{C}_{1-3}$  alkylthio,  $\text{C}_{1-3}$  haloalkyl,  $\text{C}_{1-3}$  haloalkoxy or  $\text{C}_{1-3}$  haloalkylthio,  $\text{A}$  is
- 40
- 45
- 50
- 55



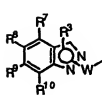
A-1

A-2

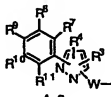
A-3



A-4



A-5



A-6



A-7

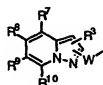


A-8



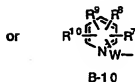
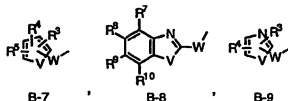
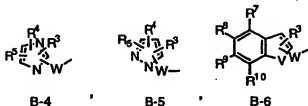
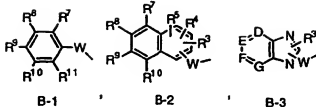
A-9

or



A-10

B is A-1 to A-10, or



W is a chemical bond or O,  
V is O or S,

D, E, F and G are each independently N, CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and  
R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup> and R<sup>11</sup> are each independently H, C<sub>1-8</sub> alkyl, C<sub>3-8</sub> cycloalkyl, C<sub>2-8</sub> alkenyl, C<sub>5-8</sub> cycloalkenyl, C<sub>2-8</sub> alkynyl, C<sub>1-8</sub> alkoxy, C<sub>3-8</sub> cycloalkyloxy, C<sub>5-8</sub> cycloalkenyloxy, C<sub>2-8</sub> alkenyloxy, C<sub>2-8</sub> alkynyloxy, C<sub>1-8</sub> alkylthio, C<sub>3-8</sub> cycloalkylthio, C<sub>5-8</sub> cycloalkenythio, C<sub>2-8</sub> alkenylthio, C<sub>2-8</sub> alkynylthio, C<sub>1-8</sub> haloalkyl, C<sub>1-8</sub> haloalkoxy, C<sub>1-8</sub> haloalkylthio, C<sub>2-8</sub> haloalkenyl, C<sub>2-8</sub> haloalkenyloxy, C<sub>2-8</sub> haloalkenythio, C<sub>2-8</sub> haloalkynyl, C<sub>2-8</sub> haloalkynyloxy, C<sub>2-8</sub> haloalkynylthio, phenyl which may be substituted (the kinds of substituent include, halogen, C<sub>1-8</sub> alkyl, C<sub>1-8</sub> haloalkyl, C<sub>1-8</sub> alkoxy, C<sub>1-8</sub> haloalkoxy, C<sub>1-8</sub> alkylthio, C<sub>1-8</sub> haloalkylthio, C<sub>1-8</sub> alkylsulfonyl, C<sub>1-8</sub> alkylsulfonyl, CN, NO<sub>2</sub> and C<sub>1-8</sub> alkoxy carbonyl, the number of the substituents is 1 to 5, and the substituents may be identical or different.), phenyl C<sub>1-4</sub> alkyl which may be substituted, benzylthio which may be substituted, benzylthio which may be substituted, phenylthio which may be substituted, benzoyl which may be substituted, benzoyl C<sub>1-4</sub> alkyl which may be substituted, benzoyloxy which may be substituted, benzoyloxy C<sub>1-4</sub> alkyl which may be substituted, naphthyl which may be substituted, 5- or 6-membered heterocyclic ring which may be substituted, C<sub>1-8</sub> hydroxyalkyl, C<sub>1-8</sub> hydroxyhaloalkyl, C<sub>1-8</sub> alkoxy C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkoxy C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylthio C<sub>1-4</sub> alkyl, C<sub>1-10</sub> dialkoxy C<sub>1-4</sub> alkyl, C<sub>1-3</sub> alkylenedioxy C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylthio C<sub>1-4</sub> alkyl, C<sub>1-10</sub> dialkylthio C<sub>1-4</sub> alkyl, C<sub>1-3</sub> alkylenedithio C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkoxy carbonyl, C<sub>1-6</sub> haloalkoxy carbonyl, C<sub>1-6</sub> alkoxyoxalyl, CHO, CO<sub>2</sub>H, C<sub>1-6</sub> alkoxy carbonyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkoxy-

carbonyl C<sub>1-4</sub> alkyl, NH<sub>2</sub>, C<sub>1-6</sub> alkylamino, C<sub>1-6</sub> alkylcarbonylamino, C<sub>1-6</sub> alkylcarbonylamino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylcarbonylamino, C<sub>1-6</sub> haloalkylcarbonylamino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkoxy carbonylamino, C<sub>1-6</sub> alkoxy carbonylamino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylsulfonamino, C<sub>1-6</sub> alkylsulfonamino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylsulfonamino, C<sub>1-6</sub> haloalkylsulfonamino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> dialkylamino, C<sub>1-6</sub> dialkylamino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> dialkylaminocarbonyl, C<sub>1-6</sub> dialkylaminocarbonyl C<sub>1-4</sub> alkyl, C<sub>2-6</sub> alkyleneimino, C<sub>2-6</sub> alkyleneimino C<sub>1-4</sub> alkyl, C<sub>2-6</sub> alkyleneimino carbonyl, C<sub>2-6</sub> alkyleneimino carbonyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylcarbonyl, C<sub>1-6</sub> alkylcarbonyloxy, C<sub>1-6</sub> haloalkylcarbonyl, C<sub>1-6</sub> haloalkylcarbonyloxy, C<sub>1-6</sub> alkylcarbonyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylcarbonyloxy C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylcarbonyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylcarbonyloxy C<sub>1-4</sub> alkyl, C<sub>1-6</sub> hydroxylamino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkoxyimino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylcarbonyloxyimino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylsulfonoyloxyimino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylsulfonoyl, C<sub>1-6</sub> haloalkylsulfonoyl, C<sub>1-6</sub> alkylsulfonoyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylsulfonoyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylsulfonoyl, C<sub>1-6</sub> haloalkylsulfonoyl, C<sub>1-6</sub> alkylsulfonoyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylsulfonoyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylsulfonoyl, C<sub>1-6</sub> haloalkylsulfonoyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> dialkylsulfamoyl, C<sub>1-6</sub> dialkylsulfamoyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkoxy sulfonoyl, C<sub>1-6</sub> alkoxy sulfonoyl C<sub>1-4</sub> alkyl, C<sub>2-6</sub> cyanoalkyl, CN, C<sub>1-6</sub> thiocarbonyl, C<sub>1-6</sub> nitroalkyl, NO<sub>2</sub> or halogen, or two of R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup> and R<sup>11</sup> together are C<sub>1-3</sub> alkyleneoxy which may be substituted, or C<sub>3-6</sub> alkylene.

[2] A sulfamoyl compound described in [1] above, in which A is A-1.

[3] A sulfamoyl compound described in [1] above, in which A is A-2.

[4] A sulfamoyl compound described in [1] above, in which A is A-3.

[5] A sulfamoyl compound described in [1] above, in which A is A-4.

[6] A sulfamoyl compound described in [1] above, in which A is A-5 or A-6.

[7] A sulfamoyl compound described in [1] above, in which A is A-7 or A-8.

[8] A sulfamoyl compound described in [1] above, in which A is A-9 or A-10.

[9] A sulfamoyl compound described in [1] above, in which B is B-1.

[10] A sulfamoyl compound described in [1] above, in which B is B-2.

[11] A sulfamoyl compound described in [1] above, in which B is B-3 or B-4.

[12] A sulfamoyl compound described in [1] above, in which B is B-5.

[13] A sulfamoyl compound described in [1] above, in which B is B-6 or B-7.

[14] A sulfamoyl compound described in [1] above, in which B is B-8 or B-9.

[15] A sulfamoyl compound described in [1] above, in which B is B-10.

[16] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and R<sup>3</sup> is C<sub>1-3</sub> alkylthio.

[17] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and R<sup>3</sup> is C<sub>1-3</sub> alkyl.

[18] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and R<sup>3</sup> is C<sub>1-3</sub> haloalkyl.

[19] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and R<sup>3</sup> is halogen.

[20] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and R<sup>3</sup> is H.

[21] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and R<sup>3</sup> is CN.

[22] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-2, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and any of R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> is H.

[23] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-4, and at least one of R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> is phenyl which may be substituted.

[24] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, and B is B-1.

[25] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, R<sup>3</sup> is C<sub>1-3</sub> alkyl, and R<sup>4</sup> is halogen.

[26] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and any of R<sup>3</sup> and R<sup>4</sup> is halogen.

[27] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, R<sup>3</sup> is C<sub>1-3</sub> alkyl, and R<sup>4</sup> is H or C<sub>1-3</sub> alkyl.

[28] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, R<sup>3</sup> is C<sub>1-3</sub> haloalkyl, and R<sup>4</sup> is H, halogen or C<sub>1-3</sub> alkyl.

[29] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are M, Y is H, W is a chemical bond, A is

A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, R<sup>3</sup> is H or C<sub>1-3</sub> alkyl, and R<sup>4</sup> is C<sub>1-5</sub> alkoxy carbonyl.

[30] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, R<sup>3</sup> is H, and R<sup>4</sup> is halogen.

[31] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, R<sup>3</sup> is CN, and R<sup>4</sup> is H or C<sub>1-3</sub> alkyl.

[32] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, any of D, E, F and G is CH, R<sup>3</sup> is C<sub>1-3</sub> alkyl, and R<sup>4</sup> is halogen.

[33] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, any of D, E, F and G is CH, and any of R<sup>3</sup> and R<sup>4</sup> is halogen.

[34] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, any of D, E, F and G is CH, R<sup>3</sup> is C<sub>1-3</sub> haloalkyl, and R<sup>4</sup> is H or C<sub>1-3</sub> alkyl.

[35] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, any of D, E, F and G is CH, R<sup>3</sup> is Me or Et, and R<sup>4</sup> is Cl or Br.

[36] A sulfamoyl compound described in [1] above, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, any of D, E, F and G is CH, R<sup>3</sup> is Cl or Br, and R<sup>4</sup> is Cl or Br.

[37] An agricultural chemical containing as the active ingredient at least one sulfamoyl compound described in [1] to [36] above.

[38] An agricultural chemical as described in [37] above, in which the agricultural chemical is an agricultural and horticultural fungicide.

[0006] In the compounds of the general formula (1), examples of C<sub>1-4</sub> alkyl for R<sup>1</sup> and R<sup>2</sup> are methyl, ethyl, n- or i-propyl, n-, i- or s-butyl and the like.

[0007] Examples of C<sub>4-5</sub> alkylene formed by R<sup>1</sup> and R<sup>2</sup> together are piperidine including the N to which R<sup>1</sup> and R<sup>2</sup> are bonded and the like.

[0008] Examples of C<sub>4-5</sub> alkyleneoxy formed by R<sup>1</sup> and R<sup>2</sup> together are morpholine including the N to which R<sup>1</sup> and R<sup>2</sup> are bonded and the like.

[0009] The definitions of substituents Y, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup> and R<sup>11</sup> have following meanings.

[0010] Examples of C<sub>1-3</sub> alkyl are methyl, ethyl, n- or i-propyl, n- or i-butyl, n-pentyl and the like.

[0011] Examples of C<sub>3-8</sub> cycloalkyl are cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl and the like.

[0012] Examples of C<sub>2-8</sub> alkenyl are allyl, vinyl and the like.

[0013] Examples of C<sub>5-8</sub> cycloalkenyl are cyclopentenyl and the like.

[0014] Examples of C<sub>2-8</sub> alkynyl are propargyl and the like.

[0015] Examples of C<sub>1-8</sub> alkoxy are methoxy, ethoxy and the like.

[0016] Examples of C<sub>3-8</sub> cycloalkyloxy are cyclopropyloxy and the like.

[0017] Examples of C<sub>3-8</sub> cycloalkenyloxy are cyclopentenyl-3-oxy and the like.

[0018] Examples of C<sub>2-8</sub> alkenyloxy are allyloxy and the like.

[0019] Examples of C<sub>2-8</sub> alkynyloxy are propargyloxy and the like.

[0020] Examples of C<sub>1-8</sub> alkythio are methylthio, ethylthio, n- or i-propylthio and the like.

[0021] Examples of C<sub>3-8</sub> cycloalkylthio are cyclopentylthio and the like.

[0022] Examples of C<sub>3-8</sub> cycloalkenythio are cyclopentenyl-3-thio and the like.

[0023] Examples of C<sub>2-8</sub> alkenylthio are allylthio and the like.

[0024] Examples of C<sub>2-8</sub> alkynylthio are propargylthio and the like.

[0025] Examples of C<sub>1-8</sub> haloalkoxy are trifluoromethoxy and the like.

[0026] Examples of C<sub>1-8</sub> haloalkylthio are trifluoromethylthio and the like.

[0027] Examples of C<sub>1-8</sub> haloalkyl are chloromethyl, dichloromethyl, dichlorofluoromethyl, trifluoromethyl and the like.

[0028] Examples of C<sub>2-8</sub> haloalkenyl are 3-chloroallyl and the like.

[0029] Examples of C<sub>2-8</sub> haloalkenyloxy are 3-chloroallyloxy and the like.

[0030] Examples of C<sub>2-8</sub> haloalkenylthio are 3-chloroallylthio and the like.

[0031] Examples of C<sub>2-8</sub> haloalkynyl are iodopropargyl and the like.

[0032] Examples of C<sub>2-8</sub> haloalkynyloxy are iodopropargyloxy and the like.

[0033] Examples of C<sub>2-8</sub> haloalkynylthio are iodopropargylthio and the like.

[0034] Examples of C<sub>1-8</sub> hydroxyalkyl are hydroxymethyl, 1-hydroxyethyl and the like.

[0035] Examples of C<sub>1-8</sub> hydroxyhaloalkyl are 2,2,2-trifluoro-1-hydroxyethyl and the like.

[0036] Examples of C<sub>1-5</sub> alkoxy C<sub>1-4</sub> alkyl are methoxymethyl, methoxyethyl and the like.

[0037] Examples of C<sub>1-5</sub> haloalkoxy C<sub>1-4</sub> alkyl are trifluoroethoxymethyl and the like.

[0038] Examples of C<sub>1-5</sub> alkythio C<sub>1-4</sub> alkyl are methylthiomethyl, ethylthiomethyl, methylthioethyl and the like.

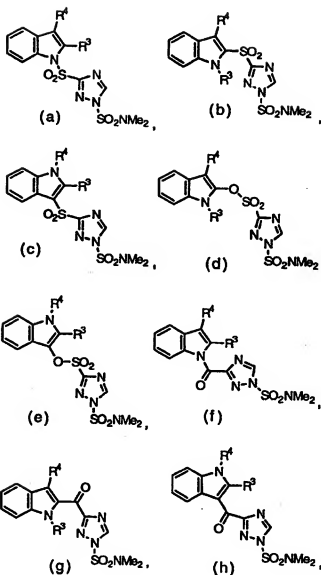
[0039] Examples of C<sub>1-5</sub> haloalkylthio C<sub>1-4</sub> alkyl are trifluoroethylthiomethyl and the like.

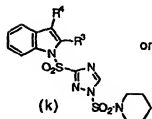
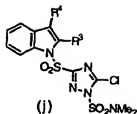
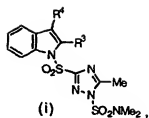
- [0040] Examples of  $C_{1-10}$  dialkoxy  $C_{1-4}$  alkyl are dimethoxymethyl, diethoxymethyl and the like.
- [0041] Examples of  $C_{1-10}$  dialkylthio  $C_{1-4}$  alkyl are dimethylthiomethyl, diethylthiomethyl and the like.
- [0042] Examples of  $C_{1-3}$  alkylenedioxy  $C_{1-4}$  alkyl are ethylenedioxyethyl and the like.
- [0043] Examples of  $C_{1-3}$  alkylenedithio  $C_{1-4}$  alkyl are ethylenedithiomethyl and the like.
- [0044] Examples of phenoxy  $C_{1-4}$  alkyl which may be substituted are phenoxyethyl and the like.
- [0045] Examples of phenoxy which may be substituted are phenoxy and the like.
- [0046] Examples of phenylthio  $C_{1-4}$  alkyl which may be substituted are phenylthiomethyl and the like.
- [0047] Examples of phenylthio which may be substituted are phenylthio and the like.
- [0048] Examples of phenyl  $C_{1-4}$  alkyl which may be substituted are benzyl, phenethyl and the like.
- [0049] Examples of benzylthio which may be substituted are benzylthio and the like.
- [0050] Examples of benzoyloxy which may be substituted are benzoyloxy and the like.
- [0051] Examples of phenyl which may be substituted are phenyl and the like.
- [0052] Examples of benzoyl which may be substituted are benzoyl and the like.
- [0053] Examples of benzoyl  $C_{1-4}$  alkyl which may be substituted are benzoylmethyl and the like.
- [0054] Examples of benzoyloxy which may be substituted are benzoyloxy and the like.
- [0055] Examples of benzoyloxy  $C_{1-4}$  alkyl which may be substituted are benzoyloxyethyl and the like.
- [0056] Examples of naphthyl which may be substituted are naphthyl and the like.
- [0057] Examples of 5- or 6-membered heterocyclic ring are pyridine, thiophene, furan, thiazole and the like.
- [0058] Examples of  $C_{1-6}$  alkoxy carbonyl are methoxycarbonyl and the like.
- [0059] Examples of  $C_{1-6}$  alkoxy carbonyl  $C_{1-4}$  alkyl are methoxycarbonylmethyl and the like.
- [0060] Examples of  $C_{1-6}$  haloalkoxy carbonyl are fluoroethoxycarbonyl and the like.
- [0061] Examples of  $C_{1-6}$  haloalkoxy carbonyl  $C_{1-4}$  alkyl are fluoroethoxycarbonylmethyl and the like.
- [0062] Examples of  $C_{1-6}$  alkoxyoxalyl are methoxyoxalyl, ethoxyoxalyl and the like.
- [0063] Examples of  $C_{1-6}$  dialkylamino are dimethylamino and the like.
- [0064] Examples of  $C_{1-6}$  alkylamino are methylamino and the like.
- [0065] Examples of  $C_{1-6}$  dialkylamino  $C_{1-4}$  alkyl are dimethylaminomethyl and the like.
- [0066] Examples of  $C_{2-6}$  alkyleneimino are pyrrolidino, piperidino and the like.
- [0067] Examples of  $C_{2-6}$  alkyleneiminocarbonyl are pyrrolidinocarbonyl, piperidinocarbonyl and the like.
- [0068] Examples of  $C_{2-6}$  alkyleneimino  $C_{1-4}$  alkyl are pyrrolidinomethyl, piperidinomethyl and the like.
- [0069] Examples of  $C_{2-6}$  alkyleneiminocarbonyl  $C_{1-4}$  alkyl are pyrrolidinocarbonylmethyl, piperidinocarbonylmethyl and the like.
- [0070] Examples of  $C_{1-6}$  alkylcarbonylamino are acetylamino and the like.
- [0071] Examples of  $C_{1-6}$  alkoxy carbonylamino are methoxycarbonylamino and the like.
- [0072] Examples of  $C_{1-6}$  haloalkylcarbonylamino are trifluoroacetylamino and the like.
- [0073] Examples of  $C_{1-6}$  alkylsulfonylamino are methanesulfonylamino and the like.
- [0074] Examples of  $C_{1-6}$  haloalkylsulfonylamino are chloromethylsulfonylamino and the like.
- [0075] Examples of  $C_{1-6}$  alkylcarbonylamino  $C_{1-4}$  alkyl are acetylaminoethyl and the like.
- [0076] Examples of  $C_{1-6}$  alkoxy carbonylamino  $C_{1-4}$  alkyl are methoxycarbonylaminoethyl and the like.
- [0077] Examples of  $C_{1-6}$  haloalkylcarbonylamino  $C_{1-4}$  alkyl are trifluoroacetylaminoethyl and the like.
- [0078] Examples of  $C_{1-6}$  alkylsulfonylamino  $C_{1-4}$  alkyl are methanesulfonylaminoethyl and the like.
- [0079] Examples of  $C_{1-6}$  haloalkylsulfonylamino  $C_{1-4}$  alkyl are chloromethylsulfonylaminoethyl and the like.
- [0080] Examples of  $C_{1-6}$  dialkylaminocarbonyl are dimethylaminocarbonyl and the like.
- [0081] Examples of  $C_{1-6}$  dialkylaminocarbonyl  $C_{1-4}$  alkyl are dimethylaminocarbonylmethyl and the like.
- [0082] Examples of  $C_{1-6}$  alkylcarbonyl are acetyl and the like.
- [0083] Examples of  $C_{1-6}$  haloalkylcarbonyl are trifluoroacetyl and the like.
- [0084] Examples of  $C_{1-6}$  alkylcarbonyloxy are acetyloxy and the like.
- [0085] Examples of  $C_{1-6}$  haloalkylcarbonyloxy are trifluoroacetyloxy and the like.
- [0086] Examples of  $C_{1-6}$  alkylcarbonyl  $C_{1-4}$  alkyl are acetylmethyl and the like.
- [0087] Examples of  $C_{1-6}$  haloalkylcarbonyl  $C_{1-4}$  alkyl are trifluoroacetylmethyl and the like.
- [0088] Examples of  $C_{1-6}$  alkylcarbonyloxy  $C_{1-4}$  alkyl are acetyloxyethyl and the like.
- [0089] Examples of  $C_{1-6}$  haloalkylcarbonyloxy  $C_{1-4}$  alkyl are trifluoroacetyloxyethyl and the like.
- [0090] Examples of hydroxyimino  $C_{1-4}$  alkyl are hydroxyiminomethyl and the like.
- [0091] Examples of alkoxyimino  $C_{1-4}$  alkyl are methoxyiminomethyl and the like.
- [0092] Examples of  $C_{1-6}$  alkylcarbonyloxyimino  $C_{1-4}$  alkyl are acetyloxyiminomethyl and the like.
- [0093] Examples of  $C_{1-6}$  alkylsulfonyloxyimino  $C_{1-4}$  alkyl are methanesulfonyloxyiminomethyl and the like.
- [0094] Examples of  $C_{1-6}$  alkylsulfoxy are methylsulfoxy and the like.
- [0095] Examples of  $C_{1-6}$  alkylsulfoxy  $C_{1-4}$  alkyl are methylsulfoxyethyl, ethylsulfoxyethyl and the like.



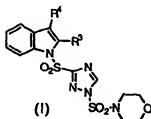
- [0096] Examples of C<sub>1-6</sub> alkylsulfonyl are methanesulfonyl and the like.
- [0097] Examples of C<sub>1-6</sub> alkylsulfonyloxy are methanesulfonyloxy and the like.
- [0098] Examples of C<sub>1-6</sub> alkylsulfonyl C<sub>1-4</sub> alkyl are methylsulfonylmethyl, ethylsulfonylmethyl, methylsulfonylethyl and the like.
- 5 [0099] Examples of C<sub>1-6</sub> alkylsulfonyloxy C<sub>1-4</sub> alkyl are methylsulfonyloxymethyl and the like.
- [0100] Examples of C<sub>1-6</sub> haloalkylsulfoxy are chloromethylsulfoxy and the like.
- [0101] Examples of C<sub>1-6</sub> haloalkylsulfoxy C<sub>1-4</sub> alkyl are chloromethylsulfoxymethyl and the like.
- [0102] Examples of C<sub>1-6</sub> haloalkylsulfonyl are trifluoromethylsulfonyl and the like.
- [0103] Examples of C<sub>1-6</sub> haloalkylsulfonyloxy are trifluoromethylsulfonyloxy and the like.
- 10 [0104] Examples of C<sub>1-6</sub> haloalkylsulfonyl C<sub>1-4</sub> alkyl are trifluoromethylsulfonylmethyl and the like.
- [0105] Examples of C<sub>1-6</sub> haloalkylsulfonyloxy C<sub>1-4</sub> alkyl are trifluoromethylsulfonyloxymethyl and the like.
- [0106] Examples of C<sub>1-6</sub> dialkylsulfamoyl are dimethylsulfamoyl and the like.
- [0107] Examples of C<sub>1-6</sub> dialkylsulfamoyl C<sub>1-4</sub> alkyl are dimethylsulfamoylmethyl and the like.
- [0108] Examples of C<sub>1-6</sub> alkoxysulfonyl are methoxysulfonyl and the like.
- 15 [0109] Examples of C<sub>1-6</sub> alkoxysulfonyl C<sub>1-4</sub> alkyl are methoxysulfonylmethyl and the like.
- [0110] Examples of C<sub>1-6</sub> haloalkoxysulfonyl are fluoroethoxysulfonyl and the like.
- [0111] Examples of C<sub>1-6</sub> haloalkoxysulfonyl C<sub>1-4</sub> alkyl are fluoroethoxysulfonylmethyl and the like.
- [0112] Examples of C<sub>1-6</sub> nitroalkyl are nitromethyl and the like.
- [0113] Examples of C<sub>2-6</sub> cyanoalkyl are cyanomethyl and the like.
- 20 [0114] Examples of C<sub>1-6</sub> thiocarbamoyl are CSNH<sub>2</sub> and the like.
- [0115] Examples of halogen are F, Cl, Br and I.
- [0116] Examples of C<sub>1-3</sub> alkylenedioxy which may be substituted with halogen are difluoromethylenedioxy, tetrafluoroethylenedioxy and the like.
- [0117] Next, the compounds of the invention of the formula (1) are shown in Tables 1 to 11. However, the present invention should not be construed as being limited thereto.
- 25 [0118] In the Tables, Me denotes methyl, Et denotes ethyl, Pr denotes propyl, Bu denotes butyl, n- denotes normal, i- denotes iso, s- denotes secondary, t- denotes tertiary, Ph denotes phenyl, Bn denotes benzyl, and Ac denotes acetyl.

Table 1





or



Compound No.	R <sup>1</sup>	R <sup>2</sup>
1-1	H	H
1-2	Me	H
1-3	Et	H
1-4	n-Pr	H
1-5	i-Pr	H
1-6	n-Bu	H
1-7	Ph	H
1-8	Bn	H
1-9	F	H
1-10	Cl	H
1-11	Br	H
1-12	I	H
1-13	SMe	H
1-14	SEt	H
1-15	CH <sub>2</sub> OMe	H
1-16	CClF <sub>2</sub>	H
1-17	CHF <sub>2</sub>	H
1-18	CHFCl	H
1-19	CH <sub>2</sub> Cl	H
1-20	CF <sub>3</sub>	H
1-21	CN	H
1-22	CHO	H
1-23	C <sub>2</sub> F <sub>5</sub>	H
1-24	CH=OMe	H
1-25	CO <sub>2</sub> Me	H
1-26	CO <sub>2</sub> Et	H

Table 1(continue)

Compound No.	R <sup>2</sup>	R <sup>1</sup>
1-27	CONMe,	H
1-28	COMe	H
1-29	COPh	H
1-30	CH <sub>2</sub> CO <sub>2</sub> Me	H
1-31	NO <sub>2</sub>	H
1-32	H	Cl
1-33	Me	Cl
1-34	Et	Cl
1-35	n-Pr	Cl
1-36	i-Pr	Cl
1-37	n-Bu	Cl
1-38	Ph	Cl
1-39	Bn	Cl
1-40	F	Cl
1-41	Cl	Cl
1-42	Br	Cl
1-43	I	Cl
1-44	SMe	Cl
1-45	SEt	Cl
1-46	CH <sub>2</sub> OMe	Cl
1-47	CHF <sub>2</sub>	Cl
1-48	CHFCI	Cl
1-49	CH <sub>2</sub> Cl	Cl
1-50	CF <sub>3</sub>	Cl
1-51	CN	Cl
1-52	CHO	Cl
1-53	C <sub>2</sub> F <sub>5</sub>	Cl
1-54	CH=NOMe	Cl
1-55	CO <sub>2</sub> Me	Cl
1-56	CO <sub>2</sub> Et	Cl
1-57	CONMe,	Cl
1-58	COMe	Cl
1-59	CClF <sub>2</sub>	Cl
1-60	CH <sub>2</sub> CO <sub>2</sub> Me	Cl
1-61	NO <sub>2</sub>	Cl
1-62	H	Br
1-63	Me	Br
1-64	Et	Br
1-65	n-Pr	Br
1-66	i-Pr	Br
1-67	n-Bu	Br
1-68	Ph	Br
1-69	Bn	Br
1-70	F	Br
1-71	Cl	Br
1-72	Br	Br

Table 1(continue)		
Compound No.	R <sup>1</sup>	R <sup>2</sup>
1-73	I	Br
1-74	SMe	Br
1-75	SEt	Br
1-76	CH <sub>3</sub> OMe	Br
1-77	CHF <sub>2</sub>	Br
1-78	CHFCl	Br
1-79	CH <sub>2</sub> Cl	Br
1-80	CF <sub>3</sub>	Br
1-81	CN	Br
1-82	CHO	Br
1-83	C <sub>2</sub> F <sub>5</sub>	Br
1-84	CH=NOMe	Br
1-85	CO <sub>2</sub> Me	Br
1-86	CO <sub>2</sub> Et	Br
1-87	CONMe <sub>2</sub>	Br
1-88	COMe	Br
1-89	CClF <sub>2</sub>	Br
1-90	CH <sub>2</sub> CO <sub>2</sub> Me	Br
1-91	NO <sub>2</sub>	Br
1-92	H	I
1-93	Me	I
1-94	Et	I
1-95	n-Pr	I
1-96	n-Bu	I
1-97	Ph	I
1-98	F	I
1-99	Cl	I
1-100	Br	I
1-101	I	I
1-102	SMe	I
1-103	CF <sub>3</sub>	I
1-104	CN	I
1-105	H	F
1-106	Me	F
1-107	Et	F
1-108	n-Pr	F
1-109	n-Bu	F
1-110	Ph	F
1-111	F	F
1-112	Cl	F
1-113	Br	F
1-114	CO <sub>2</sub> Et	F
1-115	SMe	F
1-116	CF <sub>3</sub>	F
1-117	CN	F
1-118	H	Me

Table 1(continue)

Compound No.	R <sup>1</sup>	R <sup>4</sup>
1-119	Me	Me
1-120	Et	Me
1-121	n-Pr	Me
1-122	CF <sub>3</sub> Cl	Me
1-123	CHF <sub>3</sub>	Me
1-124	F	Me
1-125	Cl	Me
1-126	Br	Me
1-127	I	Me
1-128	SMe	Me
1-129	CF <sub>3</sub>	Me
1-130	CN	Me
1-131	CHO	Me
1-132	CH=NOH	Me
1-133	CH=NOMe	Me
1-134	CH=NOAc	Me
1-135	H	Et
1-136	Me	Et
1-137	Et	Et
1-138	n-Pr	Et
1-139	F	Et
1-140	Cl	Et
1-141	Br	Et
1-142	CHF <sub>3</sub>	Et
1-143	CClF <sub>3</sub>	Et
1-144	CF <sub>3</sub>	Et
1-145	CN	Et
1-146	CHO	Et
1-147	-(CH <sub>2</sub> ) <sub>3</sub> -	
1-148	-(CH <sub>2</sub> ) <sub>4</sub> -	
1-149	-(CH <sub>2</sub> ) <sub>5</sub> -	
1-150	-(CH <sub>2</sub> ) <sub>6</sub> -	
1-151	H	Ph
1-152	Me	Ph
1-153	Et	Ph
1-154	n-Pr	Ph
1-155	F	Ph
1-156	Cl	Ph
1-157	Br	Ph
1-158	I	Ph
1-159	SMe	Ph
1-160	CF <sub>3</sub>	Ph
1-161	CN	Ph
1-162	CHO	Ph
1-163	H	Bn
1-164	Me	Bn

Table 1(continue)

Table I(continue)		
	Compound No.	R <sup>1</sup> R <sup>4</sup>
5	1-165	Et Bn
	1-166	n-Pr Bn
	1-167	F Bn
	1-168	Cl Bn
	1-169	Br Bn
10	1-170	I Bn
	1-171	SMe Bn
	1-172	CF <sub>3</sub> Bn
	1-173	CN Bn
15	1-174	H CF <sub>3</sub>
	1-175	Me CF <sub>3</sub>
	1-176	Et CF <sub>3</sub>
	1-177	n-Pr CF <sub>3</sub>
	1-178	n-Bu CF <sub>3</sub>
20	1-179	Ph CF <sub>3</sub>
	1-180	F CF <sub>3</sub>
	1-181	Cl CF <sub>3</sub>
	1-182	Br CF <sub>3</sub>
	1-183	I CF <sub>3</sub>
25	1-184	SMe CF <sub>3</sub>
	1-185	CF <sub>3</sub> CF <sub>3</sub>
	1-186	CN CF <sub>3</sub>
	1-187	H CHO
	1-188	Me CHO
30	1-189	Et CHO
	1-190	n-Pr CHO
	1-191	n-Bu CHO
	1-192	F CHO
35	1-193	Cl CHO
	1-194	Br CHO
	1-195	I CHO
	1-196	SMe CHO
	1-197	CF <sub>3</sub> CHO
40	1-198	CN CHO
	1-199	H CH=NOH
	1-200	Me CH=NOH
	1-201	Et CH=NOH
	1-202	n-Pr CH=NOH
45	1-203	F CH=NOH
	1-204	Cl CH=NOH
	1-205	Br CH=NOH
	1-206	I CH=NOH
	1-207	SMe CH=NOH
50	1-208	CF <sub>3</sub> CH=NOH
	1-209	CN CH=NOH
	1-210	H CH=NOMe

Tabl 1(continue)

Compound N .	R <sup>3</sup>	R <sup>4</sup>
5	1-211 Me	CH=NOMe
	1-212 Et	CH=NOMe
	1-213 n-Pr	CH=NOMe
	1-214 F	CH=NOMe
10	1-215 Cl	CH=NOMe
	1-216 Br	CH=NOMe
	1-217 I	CH=NOMe
	1-218 SMe	CH=NOMe
	1-219 CF <sub>3</sub>	CH=NOMe
15	1-220 CN	CH=NOMe
	1-221 H	CH=NOAc
	1-222 Me	CH=NOAc
	1-223 Et	CH=NOAc
	1-224 n-Pr	CH=NOAc
20	1-225 F	CH=NOAc
	1-226 Cl	CH=NOAc
	1-227 Br	CH=NOAc
	1-228 I	CH=NOAc
	1-229 SMe	CH=NOAc
25	1-230 CF <sub>3</sub>	CH=NOAc
	1-231 CN	CH=NOAc
	1-232 H	COMe
	1-233 Me	COMe
30	1-234 Et	COMe
	1-235 n-Pr	COMe
	1-236 n-Bu	COMe
	1-237 F	COMe
	1-238 Cl	COMe
35	1-239 Br	COMe
	1-240 I	COMe
	1-241 SMe	COMe
	1-242 CF <sub>3</sub>	COMe
	1-243 CN	COMe
40	1-244 H	COEt
	1-245 Me	COEt
	1-246 Et	COEt
	1-247 n-Pr	COEt
	1-248 n-Bu	COEt
45	1-249 Ph	COEt
	1-250 F	COEt
	1-251 Cl	COEt
	1-252 Br	COEt
50	1-253 I	COEt
	1-254 SMe	COEt
	1-255 CF <sub>3</sub>	COEt
	1-256 CN	COEt



Table 1(continue)

Compound No.	R <sup>3</sup>	R <sup>4</sup>
1-257	H	COPh
1-258	Me	COPh
1-259	Et	COPh
1-260	n-Pr	COPh
1-261	F	COPh
1-262	Cl	COPh
1-263	Br	COPh
1-264	I	COPh
1-265	H	COCF <sub>3</sub>
1-266	Me	COCF <sub>3</sub>
1-267	Et	COCF <sub>3</sub>
1-268	n-Pr	COCF <sub>3</sub>
1-269	F	COCF <sub>3</sub>
1-270	Cl	COCF <sub>3</sub>
1-271	Br	COCF <sub>3</sub>
1-272	I	COCF <sub>3</sub>
1-273	SMe	COCF <sub>3</sub>
1-274	CF <sub>3</sub>	COCF <sub>3</sub>
1-275	CN	COCF <sub>3</sub>
1-276	H	CO <sub>2</sub> Me
1-277	Me	CO <sub>2</sub> Me
1-278	Et	CO <sub>2</sub> Me
1-279	n-Pr	CO <sub>2</sub> Me
1-280	n-Bu	CO <sub>2</sub> Me
1-281	Ph	CO <sub>2</sub> Me
1-282	F	CO <sub>2</sub> Me
1-283	Cl	CO <sub>2</sub> Me
1-284	Br	CO <sub>2</sub> Me
1-285	I	CO <sub>2</sub> Me
1-286	SMe	CO <sub>2</sub> Me
1-287	CF <sub>3</sub>	CO <sub>2</sub> Me
1-288	CN	CO <sub>2</sub> Me
1-289	H	CO <sub>2</sub> Et
1-290	Me	CO <sub>2</sub> Et
1-291	Et	CO <sub>2</sub> Et
1-292	F	CO <sub>2</sub> Et
1-293	Cl	CO <sub>2</sub> Et
1-294	Br	CO <sub>2</sub> Et
1-295	SMe	CO <sub>2</sub> Et
1-296	CF <sub>3</sub>	CO <sub>2</sub> Et
1-297	CN	CO <sub>2</sub> Et
1-298	H	CO <sub>2</sub> n-Pr
1-299	Me	CO <sub>2</sub> n-Pr
1-300	Et	CO <sub>2</sub> n-Pr
1-301	F	CO <sub>2</sub> n-Pr
1-302	Cl	CO <sub>2</sub> n-Pr

Table 1 (continue)

Compound No.	R <sup>1</sup>	R <sup>2</sup>
5	1-303	Br
	1-304	SMe
	1-305	CF <sub>3</sub>
	1-306	CN
	1-307	H
10	1-309	Et
	1-310	F
	1-311	Cl
	1-312	Br
	1-313	SMe
15	1-314	CF <sub>3</sub>
	1-315	CN
	1-316	H
	1-317	Me
20	1-318	Et
	1-319	F
	1-320	Cl
	1-321	Br
	1-322	SMe
25	1-323	CF <sub>3</sub>
	1-324	CN
	1-325	H
	1-326	Me
	1-327	Et
30	1-328	F
	1-329	Cl
	1-330	Br
	1-331	SMe
	1-332	CF <sub>3</sub>
35	1-333	CN
	1-334	H
	1-335	Me
	1-336	Et
40	1-337	F
	1-338	Cl
	1-339	Br
	1-340	SMe
	1-341	CF <sub>3</sub>
45	1-342	CN
	1-343	H
	1-344	Me
	1-345	Et
	1-346	F
50	1-347	Cl
	1-348	Br
	1-349	SMe

Table 1(continue)

Compound No.	R <sup>3</sup>	R <sup>4</sup>
1-350	CF <sub>3</sub>	CO <sub>2</sub> t-Bu
1-351	CN	CO <sub>2</sub> t-Bu
1-352	H	CO <sub>2</sub> Ph
1-353	Me	CO <sub>2</sub> Ph
1-354	Et	CO <sub>2</sub> Ph
1-355	F	CO <sub>2</sub> Ph
1-356	Cl	CO <sub>2</sub> Ph
1-357	Br	CO <sub>2</sub> Ph
1-358	SMe	CO <sub>2</sub> Ph
1-359	CF <sub>3</sub>	CO <sub>2</sub> Ph
1-360	CN	CO <sub>2</sub> Ph
1-361	H	COCO <sub>2</sub> Me
1-362	Me	COCO <sub>2</sub> Me
1-363	F	COCO <sub>2</sub> Me
1-364	Cl	COCO <sub>2</sub> Me
1-365	Br	COCO <sub>2</sub> Me
1-366	SMe	COCO <sub>2</sub> Me
1-367	CF <sub>3</sub>	COCO <sub>2</sub> Me
1-368	CN	COCO <sub>2</sub> Me
1-369	H	COCO <sub>2</sub> Et
1-370	Me	COCO <sub>2</sub> Et
1-371	F	COCO <sub>2</sub> Et
1-372	Cl	COCO <sub>2</sub> Et
1-373	Br	COCO <sub>2</sub> Et
1-374	SMe	COCO <sub>2</sub> Et
1-375	CF <sub>3</sub>	COCO <sub>2</sub> Et
1-376	CN	COCO <sub>2</sub> Et
1-377	H	SMe
1-378	Me	SMe
1-379	Et	SMe
1-380	n-Pr	SMe
1-381	F	SMe
1-382	Cl	SMe
1-383	Br	SMe
1-384	I	SMe
1-385	SMe	SMe
1-386	CF <sub>3</sub>	SMe
1-387	CN	SMe
1-388	H	SOMe
1-389	Me	SOMe
1-390	Et	SOMe
1-391	Cl	SOMe
1-392	Br	SOMe
1-393	CF <sub>3</sub>	SOMe
1-394	CN	SOMe
1-395	H	SO <sub>2</sub> Me

Tabl 1(continue)		
Compound No.	R <sup>2</sup>	R <sup>4</sup>
1-396	Me	SO <sub>2</sub> Me
1-397	Et	SO <sub>2</sub> Me
1-398	Cl	SO <sub>2</sub> Me
1-399	Br	SO <sub>2</sub> Me
1-400	CF <sub>3</sub>	SO <sub>2</sub> Me
1-401	CN	SO <sub>2</sub> Me
1-402	H	SPh
1-403	Me	SPh
1-404	Et	SPh
1-405	n-Pr	SPh
1-406	F	SPh
1-407	Cl	SPh
1-408	Br	SPh
1-409	I	SPh
1-410	SMe	SPh
1-411	CF <sub>3</sub>	SPh
1-412	CN	SPh
1-413	H	SOPh
1-414	Me	SOPh
1-415	Et	SOPh
1-416	Cl	SOPh
1-417	Br	SOPh
1-418	CF <sub>3</sub>	SOPh
1-419	CN	SOPh
1-420	H	SO <sub>2</sub> Ph
1-421	Me	SO <sub>2</sub> Ph
1-422	Et	SO <sub>2</sub> Ph
1-423	Cl	SO <sub>2</sub> Ph
1-424	Br	SO <sub>2</sub> Ph
1-425	CF <sub>3</sub>	SO <sub>2</sub> Ph
1-426	CN	SO <sub>2</sub> Ph
1-427	H	NO <sub>2</sub>
1-428	Me	NO <sub>2</sub>
1-429	Et	NO <sub>2</sub>
1-430	Cl	NO <sub>2</sub>
1-431	Br	NO <sub>2</sub>
1-432	SMe	NO <sub>2</sub>
1-433	CF <sub>3</sub>	NO <sub>2</sub>
1-434	CN	NO <sub>2</sub>
1-435	H	CN
1-436	Me	CN
1-437	Et	CN
1-438	n-Pr	CN
1-439	F	CN
1-440	Cl	CN
1-441	Br	CN

Table 1(continue)

Compound No.	R <sup>1</sup>	R <sup>4</sup>
1-442	SMe	CN
1-443	CF <sub>3</sub>	CN
1-444	CN	CN
1-445	H	CH <sub>2</sub> CN
1-446	Me	CH <sub>2</sub> CN
1-447	Et	CH <sub>2</sub> CN
1-448	n-Pr	CH <sub>2</sub> CN
1-449	Cl	CH <sub>2</sub> CN
1-450	Br	CH <sub>2</sub> CN
1-451	SMe	CH <sub>2</sub> CN
1-452	CF <sub>3</sub>	CH <sub>2</sub> CN
1-453	CN	CH <sub>2</sub> CN
1-454	H	OMe
1-455	Me	OMe
1-456	Et	OMe
1-457	Cl	OMe
1-458	Br	OMe
1-459	SMe	OMe
1-460	CF <sub>3</sub>	OMe
1-461	CN	OMe
1-462	H	CH <sub>2</sub> NMe <sub>2</sub>
1-463	Me	CH <sub>2</sub> NMe <sub>2</sub>
1-464	Et	CH <sub>2</sub> NMe <sub>2</sub>
1-465	Cl	CH <sub>2</sub> NMe <sub>2</sub>
1-466	Br	CH <sub>2</sub> NMe <sub>2</sub>
1-467	SMe	CH <sub>2</sub> NMe <sub>2</sub>
1-468	CF <sub>3</sub>	CH <sub>2</sub> NMe <sub>2</sub>
1-469	CN	CH <sub>2</sub> NMe <sub>2</sub>
1-470	H	OCOMe
1-471	Me	OCOMe
1-472	Et	OCOMe
1-473	Cl	OCOMe
1-474	Br	OCOMe
1-475	SMe	OCOMe
1-476	CF <sub>3</sub>	OCOMe
1-477	CN	OCOMe
1-478	H	CH(OMe) <sub>2</sub>
1-479	Me	CH(OMe) <sub>2</sub>
1-480	Et	CH(OMe) <sub>2</sub>
1-481	n-Pr	CH(OMe) <sub>2</sub>
1-482	Cl	CH(OMe) <sub>2</sub>
1-483	Br	CH(OMe) <sub>2</sub>
1-484	SMe	CH(OMe) <sub>2</sub>
1-485	CF <sub>3</sub>	CH(OMe) <sub>2</sub>
1-486	CN	CH(OMe) <sub>2</sub>
1-487	H	CH(SMe) <sub>2</sub>

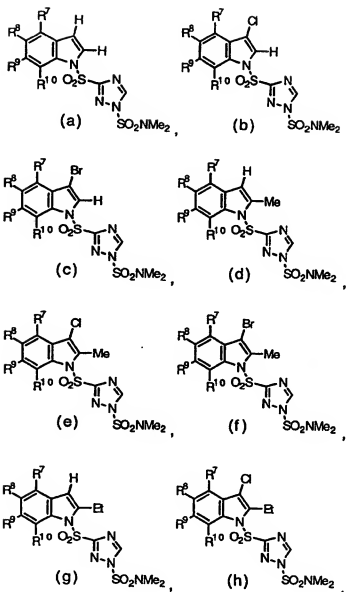
Table 1(continue)

Compound No.	R <sup>2</sup>	R <sup>1</sup>
1-488	Me	CH(SMe) <sub>2</sub>
1-489	Et	CH(SMe) <sub>2</sub>
1-490	n-Pr	CH(SMe) <sub>2</sub>
1-491	Cl	CH(SMe) <sub>2</sub>
1-492	Br	CH(SMe) <sub>2</sub>
1-493	SMe	CH(SMe) <sub>2</sub>
1-494	CF <sub>3</sub>	CH(SMe) <sub>2</sub>
1-495	CN	CH(SMe) <sub>2</sub>
1-496	H	CH <sub>2</sub> Cl
1-497	Me	CH <sub>2</sub> Cl
1-498	Et	CH <sub>2</sub> Cl
1-499	n-Pr	CH <sub>2</sub> Cl
1-500	F	CH <sub>2</sub> Cl
1-501	Cl	CH <sub>2</sub> Cl
1-502	Br	CH <sub>2</sub> Cl
1-503	I	CH <sub>2</sub> Cl
1-504	SMe	CH <sub>2</sub> Cl
1-505	CF <sub>3</sub>	CH <sub>2</sub> Cl
1-506	CN	CH <sub>2</sub> Cl
1-507	H	CH <sub>2</sub> OH
1-508	Me	CH <sub>2</sub> OH
1-509	Et	CH <sub>2</sub> OH
1-510	n-Pr	CH <sub>2</sub> OH
1-511	F	CH <sub>2</sub> OH
1-512	Cl	CH <sub>2</sub> OH
1-513	Br	CH <sub>2</sub> OH
1-514	SMe	CH <sub>2</sub> OH
1-515	CF <sub>3</sub>	CH <sub>2</sub> OH
1-516	CN	CH <sub>2</sub> OH
1-517	H	CH(OH)Me
1-518	Me	CH(OH)Me
1-519	Et	CH(OH)Me
1-520	n-Pr	CH(OH)Me
1-521	F	CH(OH)Me
1-522	Cl	CH(OH)Me
1-523	Br	CH(OH)Me
1-524	SMe	CH(OH)Me
1-525	CF <sub>3</sub>	CH(OH)Me
1-526	CN	CH(OH)Me
1-527	H	CH(OH)Et
1-528	Me	CH(OH)Et
1-529	Et	CH(OH)Et
1-530	n-Pr	CH(OH)Et
1-531	F	CH(OH)Et
1-532	Cl	CH(OH)Et
1-533	Br	CH(OH)Et

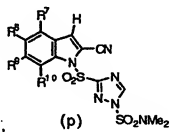
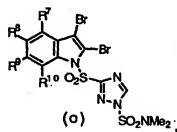
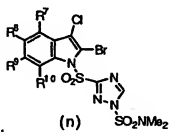
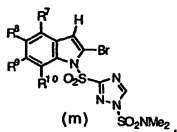
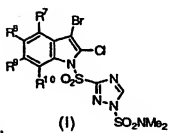
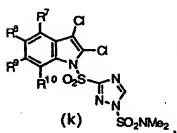
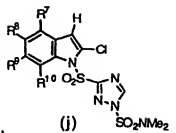
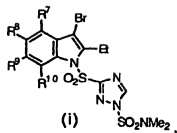
Table 1(continue)

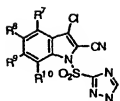
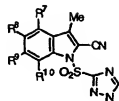
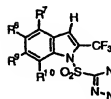
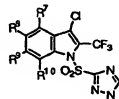
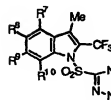
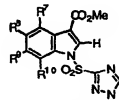
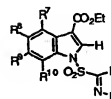
Compound No.	R <sup>3</sup>	R <sup>4</sup>
1-534	SMe	CH(OH)Et
1-535	CF <sub>3</sub>	CH(OH)Et
1-536	CN	CH(OH)Et
1-537	H	CH(OH)CF <sub>3</sub>
1-538	Me	CH(OH)CF <sub>3</sub>
1-539	Et	CH(OH)CF <sub>3</sub>
1-540	n-Pr	CH(OH)CF <sub>3</sub>
1-541	F	CH(OH)CF <sub>3</sub>
1-542	Cl	CH(OH)CF <sub>3</sub>
1-543	Br	CH(OH)CF <sub>3</sub>
1-544	SMe	CH(OH)CF <sub>3</sub>
1-545	CF <sub>3</sub>	CH(OH)CF <sub>3</sub>
1-546	CN	CH(OH)CF <sub>3</sub>
1-547	H	CH <sub>2</sub> OMe
1-548	Me	CH <sub>2</sub> OMe
1-549	Et	CH <sub>2</sub> OMe
1-550	n-Pr	CH <sub>2</sub> OMe
1-551	F	CH <sub>2</sub> OMe
1-552	Cl	CH <sub>2</sub> OMe
1-553	Br	CH <sub>2</sub> OMe
1-554	SMe	CH <sub>2</sub> OMe
1-555	CF <sub>3</sub>	CH <sub>2</sub> OMe
1-556	CN	CH <sub>2</sub> OMe
1-557	H	CONMe <sub>2</sub>
1-558	Me	CONMe <sub>2</sub>
1-559	Et	CONMe <sub>2</sub>
1-560	n-Pr	CONMe <sub>2</sub>
1-561	F	CONMe <sub>2</sub>
1-562	Cl	CONMe <sub>2</sub>
1-563	Br	CONMe <sub>2</sub>
1-564	SMe	CONMe <sub>2</sub>
1-565	CF <sub>3</sub>	CONMe <sub>2</sub>
1-566	CN	CONMe <sub>2</sub>
1-567	H	CO(4-CF <sub>3</sub> ,Ph)
1-568	Me	CO(4-CF <sub>3</sub> ,Ph)
1-569	Et	CO(4-CF <sub>3</sub> ,Ph)
1-570	Cl	CO(4-CF <sub>3</sub> ,Ph)
1-571	Br	CO(4-CF <sub>3</sub> ,Ph)

Table 2

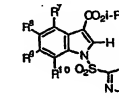






(q)  $\text{SO}_2\text{NMe}_2$ ,(r)  $\text{SO}_2\text{NMe}_2$ ,(s)  $\text{SO}_2\text{NMe}_2$ ,(t)  $\text{SO}_2\text{NMe}_2$ ,(u)  $\text{SO}_2\text{NMe}_2$ ,(v)  $\text{SO}_2\text{NMe}_2$ ,(w)  $\text{SO}_2\text{NMe}_2$ 

or

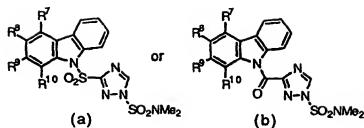
(x)  $\text{SO}_2\text{NMe}_2$ 

Compound No.	R <sup>7</sup>	R <sup>8</sup>	R <sup>9</sup>	R <sup>10</sup>
2-1	F	H	H	H
2-2	H	F	H	H
2-3	H	H	F	H
2-4	H	H	H	F
2-5	Cl	H	H	H
2-6	H	Cl	H	H
2-7	H	H	Cl	H
2-8	H	H	H	Cl

Table 2 (continue)

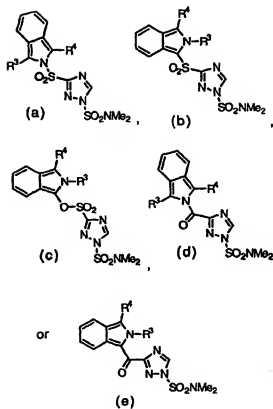
Compound No.	R <sup>7</sup>	R <sup>8</sup>	R <sup>9</sup>	R <sup>10</sup>
2-9	Br	H	H	H
2-10	H	Br	H	H
2-11	H	H	Br	H
2-12	H	H	H	Br
2-13	I	H	H	H
2-14	H	I	H	H
2-15	H	H	I	H
2-16	H	H	H	I
2-17	Me	H	H	H
2-18	H	Me	H	H
2-19	H	H	Me	H
2-20	H	H	H	Me
2-21	Et	H	H	H
2-22	H	Et	H	H
2-23	H	H	Et	H
2-24	H	H	H	Et
2-25	MeO	H	H	H
2-26	H	MeO	H	H
2-27	H	H	MeO	H
2-28	H	H	H	MeO
2-29	NO <sub>2</sub>	H	H	H
2-30	H	NO <sub>2</sub>	H	H
2-31	H	H	NO <sub>2</sub>	H
2-32	H	H	H	NO <sub>2</sub>
2-33	CN	H	H	H
2-34	H	CN	H	H
2-35	H	H	CN	H
2-36	H	H	H	CN
2-37	CF <sub>3</sub>	H	H	H
2-38	H	CF <sub>3</sub>	H	H
2-39	H	H	CF <sub>3</sub>	H
2-40	H	H	H	CF <sub>3</sub>
2-41	CO <sub>2</sub> Me	H	H	H
2-42	H	CO <sub>2</sub> Me	H	H
2-43	H	H	CO <sub>2</sub> Me	H
2-44	H	H	H	CO <sub>2</sub> Me

Table 3



Compound No.	R <sup>7</sup>	R <sup>8</sup>	R <sup>9</sup>	R <sup>10</sup>
3-1	H	H	H	H
3-2	F	H	H	H
3-3	H	F	H	H
3-4	H	H	F	H
3-5	H	H	H	F
3-6	Cl	H	H	H
3-7	H	Cl	H	H
3-8	H	H	Cl	H
3-9	H	H	H	Cl
3-10	Br	H	H	H
3-11	H	Br	H	H
3-12	H	H	Br	H
3-13	H	H	H	Br
3-14	Me	H	H	H
3-15	H	Me	H	H
3-16	H	H	Me	H
3-17	H	H	H	Me
3-18	CF <sub>3</sub>	H	H	H
3-19	H	CF <sub>3</sub>	H	H
3-20	H	H	CF <sub>3</sub>	H
3-21	H	H	H	CF <sub>3</sub>

Table 4

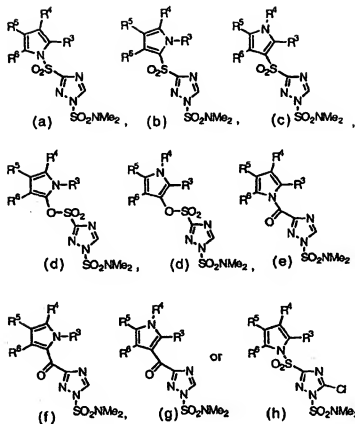


Compound No.	R <sup>3</sup>	R <sup>4</sup>
4-1	H	H
4-2	H	Me
4-3	H	Et
4-4	H	Cl
4-5	H	Br
4-6	H	CF <sub>3</sub>
4-7	Me	H
4-8	Me	Me
4-9	Me	Et
4-10	Me	Cl
4-11	Me	Br
4-12	Me	CF <sub>3</sub>
4-13	Et	H
4-14	Et	Me

Table 4 (continue)

Compound No.	R <sup>3</sup>	R <sup>4</sup>
4-15	Et	Et
4-16	Et	Cl
4-17	Et	Br
4-18	Et	CF <sub>3</sub>
4-19	Cl	H
4-20	Cl	Me
4-21	Cl	Et
4-22	Cl	Cl
4-23	Cl	Br
4-24	Cl	CF <sub>3</sub>
4-25	Br	H
4-26	Br	Me
4-27	Br	Et
4-28	Br	Br
4-29	Br	CF <sub>3</sub>

Table 5



Compound No.	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>	R <sup>6</sup>
5-1	H	Ph	H	H
5-2	Cl	Ph	H	H
5-3	H	Ph	Cl	H
5-4	H	Ph	H	Cl
5-5	Cl	Ph	Cl	H
5-6	Cl	Ph	H	Cl
5-7	H	Ph	Cl	Cl
5-8	Cl	Ph	Cl	Cl
5-9	Br	Ph	Cl	H
5-10	Cl	Ph	Br	H
5-11	Br	Ph	H	Cl
5-12	Cl	Ph	H	Br

Table 5(continue)

Compound No.	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>	R <sup>6</sup>
5-13	H	Ph	Br	Cl
5-14	H	Ph	Cl	Br
5-15	Br	Ph	Cl	Cl
5-16	Cl	Ph	Br	Cl
5-17	Cl	Ph	Cl	Br
5-18	Br	Ph	Br	Cl
5-19	Br	Ph	Cl	Br
5-20	Cl	Ph	Br	Br
5-21	Me	Ph	H	H
5-22	H	Ph	Me	H
5-23	H	Ph	H	Me
5-24	Me	Ph	Cl	H
5-25	Me	Ph	H	Cl
5-26	Me	Ph	Cl	Cl
5-27	Me	Ph	Br	Cl
5-28	Me	Ph	Cl	Br
5-29	Cl	Ph	Me	H
5-30	H	Ph	Me	Cl
5-31	Cl	Ph	Me	Cl
5-32	Br	Ph	Me	Cl
5-33	Cl	Ph	Me	Br
5-34	Cl	Ph	H	Me
5-35	H	Ph	Cl	Me
5-36	Cl	Ph	Cl	Me
5-37	Br	Ph	Cl	Me
5-38	Cl	Ph	Br	Me
5-39	Br	Ph	H	H
5-40	H	Ph	Br	H
5-41	H	Ph	H	Br
5-42	Br	Ph	Br	H
5-43	Br	Ph	H	Br
5-44	H	Ph	Br	Br
5-45	Br	Ph	Br	Br
5-46	Me	Ph	Br	H
5-47	Me	Ph	H	Br
5-48	Me	Ph	Br	Br
5-49	Br	Ph	Me	H
5-50	H	Ph	Me	Br
5-51	Br	Ph	Me	Br
5-52	Br	Ph	H	Me
5-53	H	Ph	Br	Me
5-54	Br	Ph	Br	Me
5-55	Me	Ph	Me	H
5-56	Me	Ph	Me	Cl
5-57	Me	Ph	Me	Br
5-58	H	Ph	Me	Me



Table 5(continue)

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>
5-59	Cl	Ph	Me	Me
5-60	Br	Ph	Me	Me
5-61	Me	Ph	H	Me
5-62	Me	Ph	Cl	Me
5-63	Me	Ph	Br	Me
5-64	CO <sub>2</sub> Me	Ph	Me	H
5-65	Me	Ph	CO <sub>2</sub> Me	H
5-66	CO <sub>2</sub> Me	Ph	Me	Cl
5-67	Me	Ph	CO <sub>2</sub> Me	Cl
5-68	CO <sub>2</sub> Me	Ph	Me	Br
5-69	Me	Ph	CO <sub>2</sub> Me	Br
5-70	Ac	Ph	Me	H
5-71	Me	Ph	Ac	H
5-72	Ac	Ph	Me	Cl
5-73	Me	Ph	Ac	Cl
5-74	Ac	Ph	Me	Br
5-75	Me	Ph	Ac	Br
5-76	CN	Ph	Me	H
5-77	Me	Ph	CN	H
5-78	CN	Ph	Me	Cl
5-79	Me	Ph	CN	Cl
5-80	CN	Ph	Me	Br
5-81	Me	Ph	CN	Br
5-82	H	Ph	CO <sub>2</sub> Me	Me
5-83	H	Ph	Me	CO <sub>2</sub> Me
5-84	Cl	Ph	CO <sub>2</sub> Me	Me
5-85	Cl	Ph	Me	CO <sub>2</sub> Me
5-86	Br	Ph	CO <sub>2</sub> Me	Me
5-87	Br	Ph	Me	CO <sub>2</sub> Me
5-88	H	Ph	Ac	Me
5-89	H	Ph	Me	Ac
5-90	Cl	Ph	Ac	Me
5-91	Cl	Ph	Me	Ac
5-92	Br	Ph	Ac	Me
5-93	Br	Ph	Me	Ac
5-94	H	Ph	CN	Me
5-95	H	Ph	Me	CN
5-96	Cl	Ph	CN	Me
5-97	Cl	Ph	Me	CN
5-98	Br	Ph	CN	Me
5-99	Br	Ph	Me	CN
5-100	CO <sub>2</sub> Me	Ph	H	Me
5-101	Me	Ph	H	CO <sub>2</sub> Me
5-102	CO <sub>2</sub> Me	Ph	Cl	Me
5-103	Me	Ph	Cl	CO <sub>2</sub> Me
5-104	CO <sub>2</sub> Me	Ph	Br	Me

Table 5(continue)

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>
5-105	Me	Ph	Br	CO <sub>2</sub> Me
5-106	Ac	Ph	H	Me
5-107	Me	Ph	H	Ac
5-108	Ac	Ph	Cl	Me
5-109	Me	Ph	Cl	Ac
5-110	Ac	Ph	Br	Me
5-111	Me	Ph	Br	Ac
5-112	CN	Ph	H	Me
5-113	Me	Ph	H	CN
5-114	CN	Ph	Cl	Me
5-115	Me	Ph	Cl	CN
5-116	CN	Ph	Br	Me
5-117	Me	Ph	Br	CN
5-118	Et	Ph	H	H
5-119	H	Ph	Et	H
5-120	H	Ph	H	Et
5-121	Et	Ph	Cl	H
5-122	Et	Ph	H	Cl
5-123	Et	Ph	Cl	Cl
5-124	Et	Ph	Br	Cl
5-125	Et	Ph	Cl	Br
5-126	Cl	Ph	Et	H
5-127	H	Ph	Et	Cl
5-128	Cl	Ph	Et	Cl
5-129	Br	Ph	Et	Cl
5-130	Cl	Ph	Et	Br
5-131	Cl	Ph	H	Et
5-132	H	Ph	Cl	Et
5-133	Cl	Ph	Cl	Et
5-134	Br	Ph	Cl	Et
5-135	Cl	Ph	Br	Et
5-136	Et	Ph	Br	H
5-137	Et	Ph	H	Br
5-138	Et	Ph	Br	Br
5-139	Br	Ph	Et	H
5-140	H	Ph	Et	Br
5-141	Br	Ph	Et	Br
5-142	Br	Ph	H	Et
5-143	H	Ph	Br	Et
5-144	Br	Ph	Br	Et
5-145	CN	Ph	H	H
5-146	H	Ph	CN	H
5-147	H	Ph	H	CN
5-148	CN	Ph	Cl	H
5-149	CN	Ph	H	Cl
5-150	CN	Ph	Cl	Cl

Table 5(continue)

Compound No.	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>	R <sup>6</sup>
5-151	CN	Ph	Br	Cl
5-152	CN	Ph	Cl	Br
5-153	Cl	Ph	CN	H
5-154	H	Ph	CN	Cl
5-155	Cl	Ph	CN	Cl
5-156	Br	Ph	CN	Cl
5-157	Cl	Ph	CN	Br
5-158	Cl	Ph	H	CN
5-159	H	Ph	Cl	CN
5-160	Br	Ph	H	CN
5-161	H	Ph	Br	CN
5-162	CN	Ph	Br	H
5-163	CN	Ph	H	Br
5-164	CN	Ph	Br	Br
5-165	Br	Ph	CN	H
5-166	H	Ph	CN	Br
5-167	Br	Ph	CN	Br
5-168	Cl	Ph	Cl	CN
5-169	Cl	Ph	Br	CN
5-170	Br	Ph	Cl	CN
5-171	Br	Ph	Br	CN
5-172	CF <sub>3</sub>	Ph	H	H
5-173	H	Ph	CF <sub>3</sub>	H
5-174	H	Ph	H	CF <sub>3</sub>
5-175	CF <sub>3</sub>	Ph	Cl	H
5-176	CF <sub>3</sub>	Ph	H	Cl
5-177	CF <sub>3</sub>	Ph	Cl	Cl
5-178	CF <sub>3</sub>	Ph	Br	Cl
5-179	CF <sub>3</sub>	Ph	Cl	Br
5-180	Cl	Ph	CF <sub>3</sub>	H
5-181	H	Ph	CF <sub>3</sub>	Cl
5-182	Cl	Ph	CF <sub>3</sub>	Cl
5-183	Br	Ph	CF <sub>3</sub>	Cl
5-184	Cl	Ph	CF <sub>3</sub>	Br
5-185	Cl	Ph	H	CF <sub>3</sub>
5-186	H	Ph	Cl	CF <sub>3</sub>
5-187	Cl	Ph	Cl	CF <sub>3</sub>
5-188	Br	Ph	Cl	CF <sub>3</sub>
5-189	Cl	Ph	Br	CF <sub>3</sub>
5-190	CF <sub>3</sub>	Ph	Br	H
5-191	CF <sub>3</sub>	Ph	H	Br
5-192	CF <sub>3</sub>	Ph	Br	Br
5-193	Br	Ph	CF <sub>3</sub>	H
5-194	H	Ph	CF <sub>3</sub>	Br
5-195	Br	Ph	CF <sub>3</sub>	Br
5-196	Br	Ph	H	CF <sub>3</sub>

		Tabl 5(c ntinue)			
Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	
5-197	H	Ph	Br	CF <sub>3</sub>	
5-198	Br	Ph	Br	CF <sub>3</sub>	
5-199	NO <sub>2</sub>	Ph	H	H	
5-200	H	Ph	NO <sub>2</sub>	H	
5-201	H	Ph	H	NO <sub>2</sub>	
5-202	NO <sub>2</sub>	Ph	Cl	H	
5-203	NO <sub>2</sub>	Ph	H	Cl	
5-204	NO <sub>2</sub>	Ph	Cl	Cl	
5-205	NO <sub>2</sub>	Ph	Br	Cl	
5-206	NO <sub>2</sub>	Ph	Cl	Br	
5-207	Cl	Ph	NO <sub>2</sub>	H	
5-208	H	Ph	NO <sub>2</sub>	Cl	
5-209	Cl	Ph	NO <sub>2</sub>	Cl	
5-210	Br	Ph	NO <sub>2</sub>	Cl	
5-211	Cl	Ph	NO <sub>2</sub>	Br	
5-212	Cl	Ph	H	NO <sub>2</sub>	
5-213	H	Ph	Cl	NO <sub>2</sub>	
5-214	Cl	Ph	Cl	NO <sub>2</sub>	
5-215	Br	Ph	Cl	NO <sub>2</sub>	
5-216	Cl	Ph	Br	NO <sub>2</sub>	
5-217	NO <sub>2</sub>	Ph	Br	H	
5-218	NO <sub>2</sub>	Ph	H	Br	
5-219	NO <sub>2</sub>	Ph	Br	Br	
5-220	Br	Ph	NO <sub>2</sub>	H	
5-221	H	Ph	NO <sub>2</sub>	Br	
5-222	Br	Ph	NO <sub>2</sub>	Br	
5-223	Br	Ph	H	NO <sub>2</sub>	
5-224	H	Ph	Br	NO <sub>2</sub>	
5-225	Br	Ph	Br	NO <sub>2</sub>	
5-226	CO <sub>2</sub> Me	Ph	H	H	
5-227	H	Ph	CO <sub>2</sub> Me	H	
5-228	H	Ph	H	CO <sub>2</sub> Me	
5-229	CO <sub>2</sub> Me	Ph	Cl	H	
5-230	CO <sub>2</sub> Me	Ph	H	Cl	
5-231	CO <sub>2</sub> Me	Ph	Cl	Cl	
5-232	CO <sub>2</sub> Me	Ph	Br	Cl	
5-233	CO <sub>2</sub> Me	Ph	Cl	Br	
5-234	Cl	Ph	CO <sub>2</sub> Me	H	
5-235	H	Ph	CO <sub>2</sub> Me	Cl	
5-236	Cl	Ph	CO <sub>2</sub> Me	Cl	
5-237	Br	Ph	CO <sub>2</sub> Me	Cl	
5-238	Cl	Ph	CO <sub>2</sub> Me	Br	
5-239	Cl	Ph	H	CO <sub>2</sub> Me	
5-240	H	Ph	Cl	CO <sub>2</sub> Me	
5-241	Cl	Ph	Cl	CO <sub>2</sub> Me	
5-242	Br	Ph	Cl	CO <sub>2</sub> Me	

Table 5(continuation)

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>
5-243	Cl	Ph	Br	CO <sub>2</sub> Me
5-244	CO <sub>2</sub> Me	Ph	Br	H
5-245	CO <sub>2</sub> Me	Ph	H	Br
5-246	CO <sub>2</sub> Me	Ph	Br	Br
5-247	Br	Ph	CO <sub>2</sub> Me	H
5-248	H	Ph	CO <sub>2</sub> Me	Br
5-249	Br	Ph	CO <sub>2</sub> Me	Br
5-250	Br	Ph	H	CO <sub>2</sub> Me
5-251	H	Ph	Br	CO <sub>2</sub> Me
5-252	Br	Ph	Br	CO <sub>2</sub> Me
5-253	Ac	Ph	H	H
5-254	H	Ph	Ac	H
5-255	H	Ph	H	Ac
5-256	Ac	Ph	Cl	H
5-257	Ac	Ph	H	Cl
5-258	Ac	Ph	Cl	Cl
5-259	Ac	Ph	Br	Cl
5-260	Ac	Ph	Cl	Br
5-261	Cl	Ph	Ac	H
5-262	H	Ph	Ac	Cl
5-263	Cl	Ph	Ac	Cl
5-264	Br	Ph	Ac	Cl
5-265	Cl	Ph	Ac	Br
5-266	Cl	Ph	H	Ac
5-267	H	Ph	Cl	Ac
5-268	Cl	Ph	Cl	Ac
5-269	Br	Ph	Cl	Ac
5-270	Cl	Ph	Br	Ac
5-271	Ac	Ph	Br	H
5-272	Ac	Ph	H	Br
5-273	Ac	Ph	Br	Br
5-274	Br	Ph	Ac	H
5-275	H	Ph	Ac	Br
5-276	Br	Ph	Ac	Br
5-277	Br	Ph	H	Ac
5-278	H	Ph	Br	Ac
5-279	Br	Ph	Br	Ac
5-280	Ph	H	H	H
5-281	Ph	Cl	H	H
5-282	Ph	H	Cl	H
5-283	Ph	H	H	Cl
5-284	Ph	Cl	Cl	H
5-285	Ph	Br	Cl	H
5-286	Ph	Cl	Br	H
5-287	Ph	Cl	H	Cl
5-288	Ph	Br	H	Cl

Table 5(continue)

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>
5-289	Ph	Cl	H	Br
5-290	Ph	H	Cl	Cl
5-291	Ph	H	Br	Cl
5-292	Ph	H	Cl	Br
5-293	Ph	Cl	Cl	Cl
5-294	Ph	Br	Cl	Cl
5-295	Ph	Cl	Br	Cl
5-296	Ph	Cl	Cl	Br
5-297	Ph	Br	Br	Cl
5-298	Ph	Br	Cl	Br
5-299	Ph	Cl	Br	Br
5-300	Ph	Me	H	H
5-301	Ph	H	Me	H
5-302	Ph	H	H	Me
5-303	Ph	Me	Cl	H
5-304	Ph	Me	H	Cl
5-305	Ph	Me	Cl	Cl
5-306	Ph	Me	Br	Cl
5-307	Ph	Me	Cl	Br
5-308	Ph	Cl	Me	H
5-309	Ph	H	Me	Cl
5-310	Ph	Cl	Me	Cl
5-311	Ph	Cl	Me	Br
5-312	Ph	Cl	H	Me
5-313	Ph	H	Cl	Me
5-314	Ph	Cl	Cl	Me
5-315	Ph	Br	H	H
5-316	Ph	H	Br	H
5-317	Ph	H	H	Br
5-318	Ph	Br	Br	H
5-319	Ph	Br	H	Br
5-320	Ph	H	Br	Br
5-321	Ph	Br	Br	Br
5-322	Ph	Me	Br	H
5-323	Ph	Me	H	Br
5-324	Ph	Me	Br	Br
5-325	Ph	Br	Me	H
5-326	Ph	H	Me	Br
5-327	Ph	Br	Me	Br
5-328	Ph	Br	Me	Cl
5-329	Ph	Br	H	Me
5-330	Ph	H	Br	Me
5-331	Ph	Br	Br	Me
5-332	Ph	CN	H	H
5-333	Ph	H	CN	H
5-334	Ph	H	H	CN

Tabl 5(continue)				
Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>
5-335	Ph	CN	Cl	H
5-336	Ph	CN	H	Cl
5-337	Ph	CN	Cl	Cl
5-338	Ph	CN	Br	Cl
5-339	Ph	CN	Cl	Br
5-340	Ph	Cl	CN	H
5-341	Ph	H	CN	Cl
5-342	Ph	Cl	CN	Cl
5-343	Ph	Br	CN	Cl
5-344	Ph	Cl	CN	Br
5-345	Ph	Cl	H	CN
5-346	Ph	H	Cl	CN
5-347	Ph	Cl	Cl	CN
5-348	Ph	Br	Cl	CN
5-349	Ph	Cl	Br	CN
5-350	Ph	CN	Br	H
5-351	Ph	CN	H	Br
5-352	Ph	CN	Br	Br
5-353	Ph	Br	CN	H
5-354	Ph	H	CN	Br
5-355	Ph	Br	CN	Br
5-356	Ph	Br	H	CN
5-357	Ph	H	Br	CN
5-358	Ph	Br	Br	CN
5-359	Ph	CF <sub>3</sub>	H	H
5-360	Ph	H	CF <sub>3</sub>	H
5-361	Ph	H	H	CF <sub>3</sub>
5-362	Ph	CF <sub>3</sub>	Cl	H
5-363	Ph	CF <sub>3</sub>	H	Cl
5-364	Ph	CF <sub>3</sub>	Cl	Cl
5-365	Ph	CF <sub>3</sub>	Br	Cl
5-366	Ph	CF <sub>3</sub>	Cl	Br
5-367	Ph	Cl	CF <sub>3</sub>	H
5-368	Ph	H	CF <sub>3</sub>	Cl
5-369	Ph	Cl	CF <sub>3</sub>	Cl
5-370	Ph	Br	CF <sub>3</sub>	Cl
5-371	Ph	Cl	CF <sub>3</sub>	Br
5-372	Ph	Cl	H	CF <sub>3</sub>
5-373	Ph	H	Cl	CF <sub>3</sub>
5-374	Ph	Cl	Cl	CF <sub>3</sub>
5-375	Ph	Br	Cl	CF <sub>3</sub>
5-376	Ph	Cl	Br	CF <sub>3</sub>
5-377	Ph	CF <sub>3</sub>	Br	H
5-378	Ph	CF <sub>3</sub>	H	Br
5-379	Ph	CF <sub>3</sub>	Br	Br
5-380	Ph	Br	CF <sub>3</sub>	H

Tabl 5 (continu )				
Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>
5-381	Ph	H	CF <sub>3</sub>	Br
5-382	Ph	Br	CF <sub>3</sub>	Br
5-383	Ph	Br	H	CF <sub>3</sub>
5-384	Ph	H	Br	CF <sub>3</sub>
5-385	Ph	Br	Br	CF <sub>3</sub>
5-386	Ph	NO <sub>2</sub>	H	H
5-387	Ph	H	NO <sub>2</sub>	H
5-388	Ph	H	H	NO <sub>2</sub>
5-389	Ph	NO <sub>2</sub>	Cl	H
5-390	Ph	NO <sub>2</sub>	H	Cl
5-391	Ph	NO <sub>2</sub>	Cl	Cl
5-392	Ph	NO <sub>2</sub>	Br	Cl
5-393	Ph	NO <sub>2</sub>	Cl	Br
5-394	Ph	Cl	NO <sub>2</sub>	H
5-395	Ph	H	NO <sub>2</sub>	Cl
5-396	Ph	Cl	NO <sub>2</sub>	Cl
5-397	Ph	Br	NO <sub>2</sub>	Cl
5-398	Ph	Cl	NO <sub>2</sub>	Br
5-399	Ph	NO <sub>2</sub>	Br	H
5-400	Ph	NO <sub>2</sub>	H	Br
5-401	Ph	NO <sub>2</sub>	Br	Br
5-402	Ph	Br	NO <sub>2</sub>	H
5-403	Ph	H	NO <sub>2</sub>	Br
5-404	Ph	Br	NO <sub>2</sub>	Br
5-405	Ph	CO <sub>2</sub> Me	H	H
5-406	Ph	H	CO <sub>2</sub> Me	H
5-407	Ph	H	H	CO <sub>2</sub> Me
5-408	Ph	CO <sub>2</sub> Me	Cl	H
5-409	Ph	CO <sub>2</sub> Me	H	Cl
5-410	Ph	CO <sub>2</sub> Me	Cl	Cl
5-411	Ph	CO <sub>2</sub> Me	Br	Cl
5-412	Ph	CO <sub>2</sub> Me	Cl	Br
5-413	Ph	Cl	CO <sub>2</sub> Me	H
5-414	Ph	H	CO <sub>2</sub> Me	Cl
5-415	Ph	Cl	CO <sub>2</sub> Me	Cl
5-416	Ph	Br	CO <sub>2</sub> Me	Cl
5-417	Ph	Cl	CO <sub>2</sub> Me	Br
5-418	Ph	Cl	H	CO <sub>2</sub> Me
5-419	Ph	H	Cl	CO <sub>2</sub> Me
5-420	Ph	Cl	Cl	CO <sub>2</sub> Me
5-421	Ph	Br	Cl	CO <sub>2</sub> Me
5-422	Ph	Cl	Br	CO <sub>2</sub> Me
5-423	Ph	Cl	Br	Me
5-424	Ph	Br	Cl	Me
5-425	Ph	CO <sub>2</sub> Me	Br	H
5-426	Ph	CO <sub>2</sub> Me	H	Br



Table 5(continua)

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>
5-427	Ph	CO <sub>2</sub> Me	Br	Br
5-428	Ph	Br	CO <sub>2</sub> Me	H
5-429	Ph	H	CO <sub>2</sub> Me	Br
5-430	Ph	Br	CO <sub>2</sub> Me	Br
5-431	Ph	Br	H	CO <sub>2</sub> Me
5-432	Ph	H	Br	CO <sub>2</sub> Me
5-433	Ph	Br	Br	CO <sub>2</sub> Me
5-434	Ph	CO <sub>2</sub> Et	Cl	H
5-435	Ph	CO <sub>2</sub> Et	H	Cl
5-436	Ph	CO <sub>2</sub> Et	Cl	Cl
5-437	Ph	CO <sub>2</sub> Et	Br	Cl
5-438	Ph	CO <sub>2</sub> Et	Cl	Br
5-439	Ph	CO <sub>2</sub> Et	Br	Br
5-440	Ph	Cl	CO <sub>2</sub> Et	H
5-441	Ph	H	CO <sub>2</sub> Et	Cl
5-442	Ph	Cl	CO <sub>2</sub> Et	Cl
5-443	Ph	Br	CO <sub>2</sub> Et	Cl
5-444	Ph	Cl	CO <sub>2</sub> Et	Br
5-445	Ph	Br	CO <sub>2</sub> Et	Br
5-446	Ph	H	H	CO <sub>2</sub> Et
5-447	Ph	Cl	H	CO <sub>2</sub> Et
5-448	Ph	H	Cl	CO <sub>2</sub> Et
5-449	Ph	Cl	Cl	CO <sub>2</sub> Et
5-450	Ph	Cl	Br	CO <sub>2</sub> Et
5-451	Ph	Br	Cl	CO <sub>2</sub> Et
5-452	Ph	Br	Br	CO <sub>2</sub> Et
5-453	Ph	H	H	Ac
5-454	Ph	Cl	H	Ac
5-455	Ph	H	Cl	Ac
5-456	Ph	Cl	Cl	Ac
5-457	Ph	H	H	Et
5-458	Ph	Cl	H	Et
5-459	Ph	H	Cl	Et
5-460	Ph	Cl	Cl	Et
5-461	Ph	H	H	Ph
5-462	Ph	Cl	H	Ph
5-463	Ph	H	Cl	Ph
5-464	Ph	Cl	Cl	Ph
5-465	Ph	Ph	H	H
5-466	H	Ph	Ph	H
5-467	H	Ph	H	Ph
5-468	Ph	Ph	Cl	H
5-469	Ph	Ph	H	Cl
5-470	Ph	Ph	Cl	Cl
5-471	Ph	Ph	Br	Cl
5-472	Ph	Ph	Cl	Br

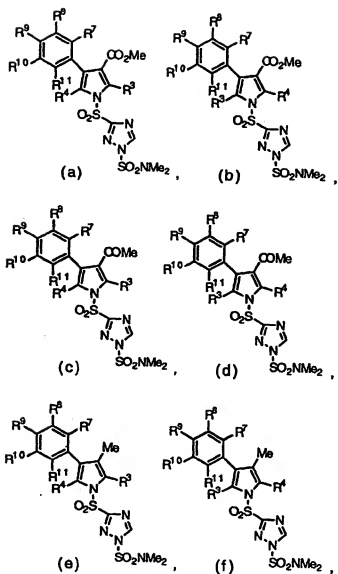
Table 5 (continue)

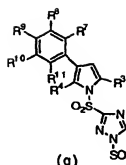
Compound No.	R <sup>2</sup>	R <sup>1</sup>	R <sup>3</sup>	R <sup>4</sup>
5-473	Ph	Ph	Br	H
5-474	Ph	Ph	H	Br
5-475	Ph	Ph	Br	Br
5-476	Cl	Ph	Ph	H
5-477	Cl	Ph	Ph	Cl
5-478	Br	Ph	Ph	H
5-479	Br	Ph	Ph	Cl
5-480	Br	Ph	Ph	Br
5-481	Cl	Ph	H	Ph
5-482	H	Ph	Cl	Ph
5-483	Br	Ph	H	Ph
5-484	H	Ph	Br	Ph
5-485	Cl	Ph	Cl	Ph
5-486	Br	Ph	Cl	Ph
5-487	Cl	Ph	Br	Ph
5-488	Br	Ph	Br	Ph
5-489	CO <sub>2</sub> Et	Ph	H	H
5-490	H	Ph	CO <sub>2</sub> Et	H
5-491	H	Ph	H	CO <sub>2</sub> Et
5-492	CO <sub>2</sub> Et	Ph	Cl	H
5-493	CO <sub>2</sub> Et	Ph	H	Cl
5-494	CO <sub>2</sub> Et	Ph	Cl	Cl
5-495	Cl	Ph	CO <sub>2</sub> Et	H
5-496	H	Ph	CO <sub>2</sub> Et	Cl
5-497	Cl	Ph	CO <sub>2</sub> Et	Cl
5-498	Cl	Ph	H	CO <sub>2</sub> Et
5-499	H	Ph	Cl	CO <sub>2</sub> Et
5-500	Cl	Ph	Cl	CO <sub>2</sub> Et
5-501	CO <sub>2</sub> Et	Ph	Br	H
5-502	CO <sub>2</sub> Et	Ph	H	Br
5-503	CO <sub>2</sub> Et	Ph	Cl	Br
5-504	CO <sub>2</sub> Et	Ph	Br	Cl
5-505	CO <sub>2</sub> Et	Ph	Br	Br
5-506	Br	Ph	CO <sub>2</sub> Et	H
5-507	H	Ph	CO <sub>2</sub> Et	Br
5-508	Br	Ph	CO <sub>2</sub> Et	Br
5-509	Cl	Ph	CO <sub>2</sub> Et	Br
5-510	Br	Ph	CO <sub>2</sub> Et	Cl
5-511	Br	Ph	H	CO <sub>2</sub> Et
5-512	H	Ph	Br	CO <sub>2</sub> Et
5-513	Br	Ph	Br	CO <sub>2</sub> Et
5-514	Cl	Ph	Br	CO <sub>2</sub> Et
5-515	Br	Ph	Cl	CO <sub>2</sub> Et
5-516	H	Ph	CO <sub>2</sub> Et	Me
5-517	Cl	Ph	CO <sub>2</sub> Et	Me
5-518	Br	Ph	CO <sub>2</sub> Et	Me

Table 5(continue)

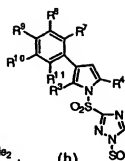
Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>
5-519	Me	Ph	CO <sub>2</sub> Et	H
5-520	Me	Ph	CO <sub>2</sub> Et	Cl
5-521	Me	Ph	CO <sub>2</sub> Et	Br
5-522	Ph	H	H	NO <sub>2</sub>
5-523	Ph	Cl	H	NO <sub>2</sub>
5-524	Ph	H	Cl	NO <sub>2</sub>
5-525	Ph	Cl	Cl	NO <sub>2</sub>

Table 6

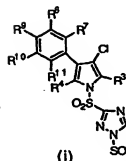




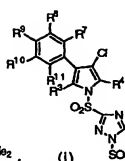
(g)



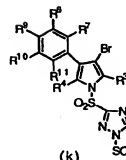
(h)



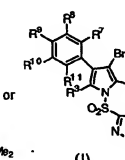
(i)



(j)



(k)



(l)

Compound No.	R <sup>3</sup>	R <sup>4</sup>	R <sup>7</sup>	R <sup>8</sup>	R <sup>9</sup>	R <sup>10</sup>	R <sup>11</sup>
6-1	H	H	Me	H	H	H	H
6-2	H	H	H	Me	H	H	H
6-3	H	H	H	H	Me	H	H
6-4	H	H	Cl	H	H	H	H
6-5	H	H	H	Cl	H	H	H
6-6	H	H	H	H	Cl	H	H
6-7	H	H	Br	H	H	H	H
6-8	H	H	H	Br	H	H	H

Table 6(continue)

Compound No.	R <sup>2</sup>	R <sup>1</sup>	R <sup>7</sup>	R <sup>8</sup>	R <sup>9</sup>	R <sup>10</sup>	R <sup>11</sup>
5	6-9	H	H	H	Br	H	H
	6-10	H	H	CF <sub>3</sub>	H	H	H
	6-11	H	H	H	CF <sub>3</sub>	H	H
	6-12	H	H	H	CF <sub>3</sub>	H	H
	6-13	H	Cl	Me	H	H	H
10	6-14	H	Cl	H	Me	H	H
	6-15	H	Cl	H	Me	H	H
	6-16	H	Cl	Cl	H	H	H
	6-17	H	Cl	H	Cl	H	H
	6-18	H	Cl	H	Cl	H	H
15	6-19	H	Cl	Br	H	H	H
	6-20	H	Cl	H	Br	H	H
	6-21	H	Cl	H	H	Br	H
	6-22	H	Cl	CF <sub>3</sub>	H	H	H
20	6-23	H	Cl	H	CF <sub>3</sub>	H	H
	6-24	H	Cl	H	H	CF <sub>3</sub>	H
	6-25	H	Br	Me	H	H	H
	6-26	H	Br	H	Me	H	H
	6-27	H	Br	H	H	Me	H
25	6-28	H	Br	Cl	H	H	H
	6-29	H	Br	H	Cl	H	H
	6-30	H	Br	H	H	Cl	H
	6-31	H	Br	Br	H	H	H
	6-32	H	Br	H	Br	H	H
30	6-33	H	Br	H	H	Br	H
	6-34	H	Br	CF <sub>3</sub>	H	H	H
	6-35	H	Br	H	CF <sub>3</sub>	H	H
	6-36	H	Br	H	H	CF <sub>3</sub>	H
	6-37	H	Me	Me	H	H	H
35	6-38	H	Me	H	Me	H	H
	6-39	H	Me	H	H	Me	H
	6-40	H	Me	Cl	H	H	H
	6-41	H	Me	H	Cl	H	H
40	6-42	H	Me	H	H	Cl	H
	6-43	H	Me	Br	H	H	H
	6-44	H	Me	H	Br	H	H
	6-45	H	Me	H	H	Br	H
	6-46	H	Me	CF <sub>3</sub>	H	H	H
45	6-47	H	Me	H	CF <sub>3</sub>	H	H
	6-48	H	Me	H	H	CF <sub>3</sub>	H
	6-49	Me	Cl	Me	H	H	H
	6-50	Me	Cl	H	Me	H	H
	6-51	Me	Cl	H	H	Me	H
50	6-52	Me	Cl	Cl	H	H	H
	6-53	Me	Cl	H	Cl	H	H
	6-54	Me	Cl	H	H	Cl	H

Table 6(continue)							
Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>	R <sup>10</sup>	R <sup>11</sup>
5	6-55	Me	Cl	Br	H	H	H
	6-56	Me	Cl	H	Br	H	H
	6-57	Me	Cl	H	Br	H	H
	6-58	Me	Cl	CF <sub>3</sub>	H	H	H
	6-59	Me	Cl	H	CF <sub>3</sub>	H	H
10	6-60	Me	Cl	H	H	CF <sub>3</sub>	H
	6-61	Me	Br	Me	H	H	H
	6-62	Me	Br	H	Me	H	H
	6-63	Me	Br	H	H	Me	H
	6-64	Me	Br	Cl	H	H	H
15	6-65	Me	Br	H	Cl	H	H
	6-66	Me	Br	H	H	Cl	H
	6-67	Me	Br	Br	H	H	H
	6-68	Me	Br	H	Br	H	H
	6-69	Me	Br	H	H	Br	H
20	6-70	Me	Br	CF <sub>3</sub>	H	H	H
	6-71	Me	Br	H	CF <sub>3</sub>	H	H
	6-72	Me	Br	H	H	CF <sub>3</sub>	H
	6-73	Cl	Cl	Me	H	H	H
25	6-74	Cl	Cl	H	Me	H	H
	6-75	Cl	Cl	H	H	Me	H
	6-76	Cl	Cl	Cl	H	H	H
	6-77	Cl	Cl	H	Cl	H	H
	6-78	Cl	Cl	H	H	Cl	H
30	6-79	Cl	Cl	Br	H	H	H
	6-80	Cl	Cl	H	Br	H	H
	6-81	Cl	Cl	H	H	Br	H
	6-82	Cl	Cl	CF <sub>3</sub>	H	H	H
	6-83	Cl	Cl	H	CF <sub>3</sub>	H	H
35	6-84	Cl	Cl	H	H	CF <sub>3</sub>	H
	6-85	Cl	Br	Me	H	H	H
	6-86	Cl	Br	H	Me	H	H
	6-87	Cl	Br	H	H	Me	H
40	6-88	Cl	Br	Cl	H	H	H
	6-89	Cl	Br	H	Cl	H	H
	6-90	Cl	Br	H	H	Cl	H
	6-91	Cl	Br	Br	H	H	H
	6-92	Cl	Br	H	Br	H	H
45	6-93	Cl	Br	H	H	Br	H
	6-94	Cl	Br	CF <sub>3</sub>	H	H	H
	6-95	Cl	Br	H	CF <sub>3</sub>	H	H
	6-96	Cl	Br	H	H	CF <sub>3</sub>	H
	6-97	Br	Br	Me	H	H	H
50	6-98	Br	Br	H	Me	H	H
	6-99	Br	Br	H	H	Me	H
	6-100	Br	Br	Cl	H	H	H

Tabl 6(continue)

Compound No.	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>	R <sup>6</sup>	R <sup>7</sup>	R <sup>10</sup>	R <sup>11</sup>
5	6-101	Br	Br	H	Cl	H	H
	6-102	Br	Br	H	H	Cl	H
	6-103	Br	Br	Br	H	H	H
	6-104	Br	Br	H	Br	H	H
	6-105	Br	Br	H	H	Br	H
10	6-106	Br	Br	CF <sub>3</sub>	H	H	H
	6-107	Br	Br	H	CF <sub>3</sub>	H	H
	6-108	Br	Br	H	H	CF <sub>3</sub>	H
	6-109	Me	Me	Me	H	H	H
	6-110	Me	Me	H	Me	H	H
15	6-111	Me	Me	H	H	Me	H
	6-112	Me	Me	Cl	H	H	H
	6-113	Me	Me	H	Cl	H	H
	6-114	Me	Me	H	H	Cl	H
	6-115	Me	Me	Br	H	H	H
20	6-116	Me	Me	H	Br	H	H
	6-117	Me	Me	H	H	Br	H
	6-118	Me	Me	CF <sub>3</sub>	H	H	H
	6-119	Me	Me	H	CF <sub>3</sub>	H	H
	6-120	Me	Me	H	H	CF <sub>3</sub>	H
25	6-121	H	H	Me	Cl	H	H
	6-122	H	H	Me	H	Cl	H
	6-123	H	H	Me	H	H	Cl
	6-124	H	H	Me	H	H	Cl
	6-125	H	H	Cl	Me	H	H
30	6-126	H	H	H	Me	Cl	H
	6-127	H	H	H	Me	H	Cl
	6-128	H	H	H	Me	H	Cl
	6-129	H	H	Cl	H	Me	H
35	6-130	H	H	H	Cl	Me	H
	6-131	H	H	Cl	Cl	H	H
	6-132	H	H	Cl	H	Cl	H
	6-133	H	H	Cl	H	H	Cl
	6-134	H	H	Cl	H	H	Cl
40	6-135	H	H	H	Cl	Cl	H
	6-136	H	H	H	Cl	H	Cl
	6-137	H	H	CF <sub>3</sub>	Cl	H	H
	6-138	H	H	CF <sub>3</sub>	H	Cl	H
	6-139	H	H	CF <sub>3</sub>	H	H	Cl
45	6-140	H	H	CF <sub>3</sub>	H	H	Cl
	6-141	H	H	Cl	CF <sub>3</sub>	H	H
	6-142	H	H	H	CF <sub>3</sub>	Cl	H
	6-143	H	H	H	CF <sub>3</sub>	H	Cl
	6-144	H	H	H	CF <sub>3</sub>	H	Cl
50	6-145	H	H	Cl	H	CF <sub>3</sub>	H
	6-146	H	H	H	Cl	CF <sub>3</sub>	H

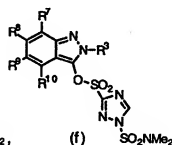
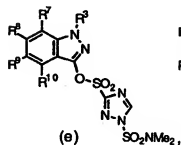
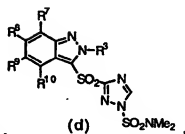
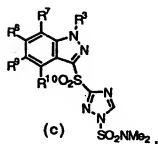
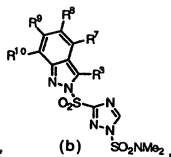
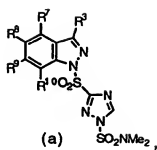


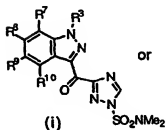
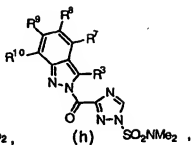
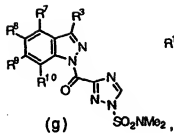
Table 6(continue)

Compound No.	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>	R <sup>6</sup>	R <sup>7</sup>	R <sup>10</sup>	R <sup>11</sup>
5	6-147	H	Cl	Me	Cl	H	H
	6-148	H	Cl	Me	H	Cl	H
	6-149	H	Cl	Me	H	H	Cl
	6-150	H	Cl	Me	H	H	Cl
	6-151	H	Cl	Cl	Me	H	H
10	6-152	H	Cl	H	Me	Cl	H
	6-153	H	Cl	H	Me	H	Cl
	6-154	H	Cl	H	Me	H	Cl
	6-155	H	Cl	Cl	H	Me	H
	6-156	H	Cl	H	Cl	Me	H
15	6-157	H	Cl	Cl	Cl	H	H
	6-158	H	Cl	Cl	H	Cl	H
	6-159	H	Cl	Cl	H	H	Cl
	6-160	H	Cl	Cl	H	H	Cl
	6-161	H	Cl	H	Cl	Cl	H
20	6-162	H	Cl	H	Cl	H	Cl
	6-163	H	Br	Me	Cl	H	H
	6-164	H	Br	Me	H	Cl	H
	6-165	H	Br	Me	H	H	Cl
25	6-166	H	Br	Me	H	H	Cl
	6-167	H	Br	Cl	Me	H	H
	6-168	H	Br	H	Me	Cl	H
	6-169	H	Br	H	Me	H	Cl
	6-170	H	Br	H	Me	H	Cl
30	6-171	H	Br	Cl	H	Me	H
	6-172	H	Br	H	Cl	Me	H
	6-173	H	Br	Cl	Cl	H	H
	6-174	H	Br	Cl	H	Cl	H
	6-175	H	Br	Cl	H	H	Cl
35	6-176	H	Br	Cl	H	H	Cl
	6-177	H	Br	H	Cl	Cl	H
	6-178	H	Br	H	Cl	H	Cl
	6-179	H	Me	Me	Cl	H	H
40	6-180	H	Me	Me	H	Cl	H
	6-181	H	Me	Me	H	H	Cl
	6-182	H	Me	Me	H	H	Cl
	6-183	H	Me	Cl	Me	H	H
	6-184	H	Me	H	Me	Cl	H
45	6-185	H	Me	H	Me	H	Cl
	6-186	H	Me	H	Me	H	Cl
	6-187	H	Me	Cl	H	Me	H
	6-188	H	Me	H	Cl	Me	H
	6-189	H	Me	Cl	Cl	H	H
50	6-190	H	Me	Cl	H	Cl	H
	6-191	H	Me	Cl	H	H	Cl
	6-192	H	Me	Cl	H	H	Cl

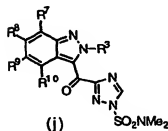
	6-193	H	Me	H	Cl	Cl	H	H
	6-194	H	Me	H	Cl	H	Cl	H
5	6-195	Cl	Me	Me	Cl	H	H	H
	6-196	Cl	Me	Me	H	Cl	H	H
	6-197	Cl	Me	Me	H	H	Cl	H
	6-198	Cl	Me	Me	H	H	H	Cl
10	6-199	Cl	Me	Cl	Me	H	H	H
	6-200	Cl	Me	H	Me	Cl	H	H
	6-201	Cl	Me	H	Me	H	Cl	H
	6-202	Cl	Me	H	Me	H	H	Cl
15	6-203	Cl	Me	Cl	H	Me	H	H
	6-204	Cl	Me	H	Cl	Me	H	H
	6-205	Cl	Me	Cl	Cl	H	H	H
	6-206	Cl	Me	Cl	H	Cl	H	H
	6-207	Cl	Me	Cl	H	H	Cl	H
20	6-208	Cl	Me	Cl	H	H	H	Cl
	6-209	Cl	Me	H	Cl	Cl	H	H
	6-210	Cl	Me	H	Cl	H	Cl	H
	6-211	Br	Me	Me	Cl	H	H	H
25	6-212	Br	Me	Me	H	Cl	H	H
	6-213	Br	Me	Me	H	H	Cl	H
	6-214	Br	Me	Me	H	H	H	Cl
	6-215	Br	Me	Cl	Me	H	H	H
	6-216	Br	Me	H	Me	Cl	H	H
30	6-217	Br	Me	H	Me	H	Cl	H
	6-218	Br	Me	H	Me	H	H	Cl
	6-219	Br	Me	Cl	H	Me	H	H
	6-220	Br	Me	H	Cl	Me	H	H
	6-221	Br	Me	Cl	Cl	H	H	H
35	6-222	Br	Me	Cl	H	Cl	H	H
	6-223	Br	Me	Cl	H	H	Cl	H
	6-224	Br	Me	Cl	H	H	H	Cl
	6-225	Br	Me	H	Cl	Cl	H	H
40	6-226	Br	Me	H	Cl	H	Cl	H

Table 7





or



25

Compound No.	R <sup>3</sup>	R <sup>7</sup>	R <sup>8</sup>	R <sup>9</sup>	R <sup>10</sup>
7-1	H	H	H	H	H
7-2	Me	H	H	H	H
7-3	Et	H	H	H	H
7-4	Ph	H	H	H	H
7-5	Cl	H	H	H	H
7-6	Br	H	H	H	H
7-7	CF <sub>3</sub>	H	H	H	H
7-8	H	Cl	H	H	H
7-9	H	H	Cl	H	H
7-10	H	H	H	Cl	H
7-11	H	H	H	H	Cl
7-12	H	Br	H	H	H
7-13	H	H	Br	H	H
7-14	H	H	H	Br	H
7-15	H	H	H	H	Br

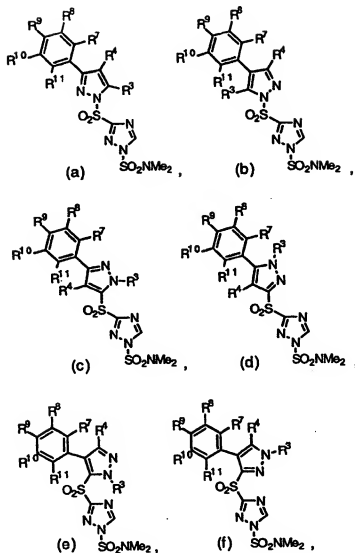
30

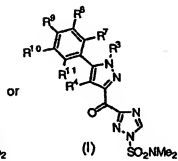
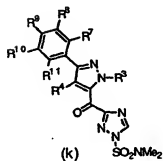
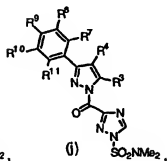
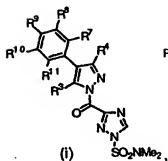
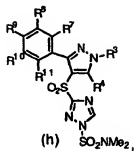
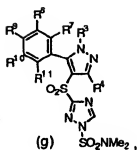
35

40

45

Table 8





Compound No.	R <sup>3</sup>	R <sup>4</sup>	R <sup>7</sup>	R <sup>8</sup>	R <sup>9</sup>	R <sup>10</sup>	R <sup>11</sup>
8-1	H	H	H	H	H	H	H
8-2	H	Cl	H	H	H	H	H
8-3	H	Br	H	H	H	H	H
8-4	H	NO <sub>2</sub>	H	H	H	H	H
8-5	H	CO <sub>2</sub> Me	H	H	H	H	H
8-6	H	CN	H	H	H	H	H
8-7	H	Me	H	H	H	H	H
8-8	H	Et	H	H	H	H	H

Table 8(continue)							
Compound No.	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>	R <sup>6</sup>	R <sup>7</sup>	R <sup>10</sup>	R <sup>11</sup>
5	8-9	H	Ph	H	H	H	H
	8-10	Me	H	H	H	H	H
	8-11	Me	Cl	H	H	H	H
	8-12	Me	Br	H	H	H	H
	8-13	Me	NO <sub>2</sub>	H	H	H	H
10	8-14	Me	CO <sub>2</sub> Me	H	H	H	H
	8-15	Me	CN	H	H	H	H
	8-16	Me	Me	H	H	H	H
	8-17	Me	Et	H	H	H	H
	8-18	Me	Ph	H	H	H	H
15	8-19	Et	H	H	H	H	H
	8-20	Et	Cl	H	H	H	H
	8-21	Et	Br	H	H	H	H
	8-22	Et	NO <sub>2</sub>	H	H	H	H
20	8-23	Et	CO <sub>2</sub> Me	H	H	H	H
	8-24	Et	CN	H	H	H	H
	8-25	Et	Me	H	H	H	H
	8-26	Et	Et	H	H	H	H
	8-27	Et	Ph	H	H	H	H
25	8-28	n-Pr	H	H	H	H	H
	8-29	n-Pr	Cl	H	H	H	H
	8-30	n-Pr	Br	H	H	H	H
	8-31	n-Pr	NO <sub>2</sub>	H	H	H	H
	8-32	n-Pr	CO <sub>2</sub> Me	H	H	H	H
30	8-33	n-Pr	CN	H	H	H	H
	8-34	n-Pr	Me	H	H	H	H
	8-35	n-Pr	Et	H	H	H	H
	8-36	n-Pr	Ph	H	H	H	H
35	8-37	Cl	H	H	H	H	H
	8-38	Cl	Cl	H	H	H	H
	8-39	Cl	Br	H	H	H	H
	8-40	Cl	NO <sub>2</sub>	H	H	H	H
	8-41	Cl	CO <sub>2</sub> Me	H	H	H	H
40	8-42	Cl	CN	H	H	H	H
	8-43	Cl	Me	H	H	H	H
	8-44	Cl	Et	H	H	H	H
	8-45	Cl	Ph	H	H	H	H
	8-46	Br	H	H	H	H	H
45	8-47	Br	Cl	H	H	H	H
	8-48	Br	Br	H	H	H	H
	8-49	Br	NO <sub>2</sub>	H	H	H	H
	8-50	Br	CO <sub>2</sub> Me	H	H	H	H
	8-51	Br	CN	H	H	H	H
50	8-52	Br	Me	H	H	H	H
	8-53	Br	Et	H	H	H	H
	8-54	Br	Ph	H	H	H	H

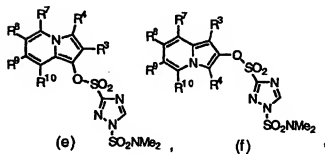
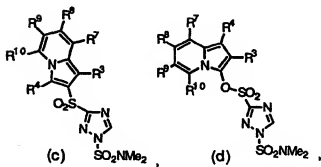
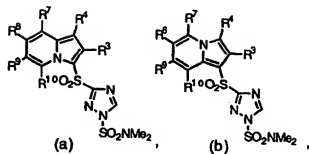
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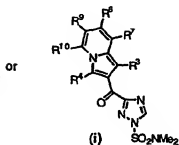
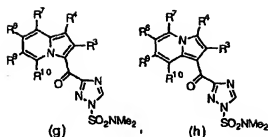
Table 8(continuu )

Compound No.	R <sup>3</sup>	R <sup>4</sup>	R <sup>7</sup>	R <sup>8</sup>	R <sup>9</sup>	R <sup>10</sup>	R <sup>11</sup>
8-55	CF <sub>3</sub>	H	H	H	H	H	H
8-56	CF <sub>3</sub>	Cl	H	H	H	H	H
8-57	CF <sub>3</sub>	Br	H	H	H	H	H
8-58	CF <sub>3</sub>	NO <sub>2</sub>	H	H	H	H	H
8-59	CF <sub>3</sub>	CO <sub>2</sub> Me	H	H	H	H	H
8-60	CF <sub>3</sub>	CN	H	H	H	H	H
8-61	CF <sub>3</sub>	Me	H	H	H	H	H
8-62	CF <sub>3</sub>	Et	H	H	H	H	H
8-63	CF <sub>3</sub>	Ph	H	H	H	H	H
8-64	Ph	H	H	H	H	H	H
8-65	Ph	Cl	H	H	H	H	H
8-66	Ph	Br	H	H	H	H	H
8-67	Ph	NO <sub>2</sub>	H	H	H	H	H
8-68	Ph	CO <sub>2</sub> Me	H	H	H	H	H
8-69	Ph	CN	H	H	H	H	H
8-70	Ph	Me	H	H	H	H	H
8-71	Ph	Et	H	H	H	H	H
8-72	Ph	Ph	H	H	H	H	H
8-73	Me	Cl	Me	H	H	H	H
8-74	Me	Cl	H	Me	H	H	H
8-75	Me	Cl	H	H	Me	H	H
8-76	Me	Cl	Cl	H	H	H	H
8-77	Me	Cl	H	Cl	H	H	H
8-78	Me	Cl	H	H	Cl	H	H
8-79	Me	Cl	Br	H	H	H	H
8-80	Me	Cl	H	Br	H	H	H
8-81	Me	Cl	H	H	Br	H	H
8-82	Me	Cl	CF <sub>3</sub>	H	H	H	H
8-83	Me	Cl	H	CF <sub>3</sub>	H	H	H
8-84	Me	Cl	H	H	CF <sub>3</sub>	H	H
8-85	Me	Br	Me	H	H	H	H
8-86	Me	Br	H	Me	H	H	H
8-87	Me	Br	H	H	Me	H	H
8-88	Me	Br	Cl	H	H	H	H
8-89	Me	Br	H	Cl	H	H	H
8-90	Me	Br	H	H	Cl	H	H
8-91	Me	Br	Br	H	H	H	H
8-92	Me	Br	H	Br	H	H	H
8-93	Me	Br	H	H	Br	H	H
8-94	Me	Br	CF <sub>3</sub>	H	H	H	H
8-95	Me	Br	H	CF <sub>3</sub>	H	H	H
8-96	Me	Br	H	H	CF <sub>3</sub>	H	H



Tabl 9





Compound No.	R <sup>3</sup>	R <sup>4</sup>	R <sup>7</sup>	R <sup>6</sup>	R <sup>5</sup>	R <sup>10</sup>
9-1	H	H	H	H	H	H
9-2	H	Cl	H	H	H	H
9-3	H	Br	H	H	H	H
9-4	H	NO <sub>2</sub>	H	H	H	H
9-5	H	CN	H	H	H	H
9-6	H	CF <sub>3</sub>	H	H	H	H
9-7	H	Me	H	H	H	H
9-8	H	Et	H	H	H	H
9-9	H	SMe	H	H	H	H
9-10	H	CO <sub>2</sub> Me	H	H	H	H
9-11	Me	H	H	H	H	H
9-12	Me	Cl	H	H	H	H
9-13	Me	Br	H	H	H	H
9-14	Me	NO <sub>2</sub>	H	H	H	H
9-15	Me	CN	H	H	H	H
9-16	Me	CF <sub>3</sub>	H	H	H	H
9-17	Me	Me	H	H	H	H
9-18	Me	Et	H	H	H	H
9-19	Me	SMe	H	H	H	H
9-20	Me	CO <sub>2</sub> Me	H	H	H	H
9-21	Et	H	H	H	H	H
9-22	Et	Cl	H	H	H	H

Table 9(continue)

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>	R <sup>6</sup>
5	9-23	Et	Br	H	H	H
	9-24	Et	NO <sub>2</sub>	H	H	H
	9-25	Et	CN	H	H	H
	9-26	Et	CF <sub>3</sub>	H	H	H
	9-27	Et	Me	H	H	H
10	9-28	Et	Et	H	H	H
	9-29	Et	SMe	H	H	H
	9-30	Et	CO <sub>2</sub> Me	H	H	H
	9-31	Cl	H	H	H	H
15	9-32	Cl	Me	H	H	H
	9-33	Cl	Et	H	H	H
	9-34	Cl	CN	H	H	H
	9-35	Cl	CF <sub>3</sub>	H	H	H
	9-36	Cl	Cl	H	H	H
20	9-37	Cl	Br	H	H	H
	9-38	Cl	NO <sub>2</sub>	H	H	H
	9-39	Cl	SMe	H	H	H
	9-40	Cl	CO <sub>2</sub> Me	H	H	H
	9-41	Br	H	H	H	H
25	9-42	Br	Me	H	H	H
	9-43	Br	Et	H	H	H
	9-44	Br	CN	H	H	H
	9-45	Br	CF <sub>3</sub>	H	H	H
	9-46	Br	Cl	H	H	H
30	9-47	Br	Br	H	H	H
	9-48	Br	NO <sub>2</sub>	H	H	H
	9-49	Br	SMe	H	H	H
	9-50	Br	CO <sub>2</sub> Me	H	H	H
	9-51	CF <sub>3</sub>	H	H	H	H
35	9-52	CF <sub>3</sub>	Me	H	H	H
	9-53	CF <sub>3</sub>	Et	H	H	H
	9-54	CF <sub>3</sub>	CN	H	H	H
	9-55	CF <sub>3</sub>	CF <sub>3</sub>	H	H	H
	9-56	CF <sub>3</sub>	Cl	H	H	H
40	9-57	CF <sub>3</sub>	Br	H	H	H
	9-58	CF <sub>3</sub>	NO <sub>2</sub>	H	H	H
	9-59	CF <sub>3</sub>	SMe	H	H	H
	9-60	CF <sub>3</sub>	CO <sub>2</sub> Me	H	H	H
45	9-61	SMe	H	H	H	H
	9-62	SMe	Cl	H	H	H
	9-63	SMe	Br	H	H	H
	9-64	SMe	NO <sub>2</sub>	H	H	H
	9-65	SMe	CN	H	H	H
50	9-66	SMe	CF <sub>3</sub>	H	H	H
	9-67	SMe	Me	H	H	H
	9-68	SMe	Et	H	H	H

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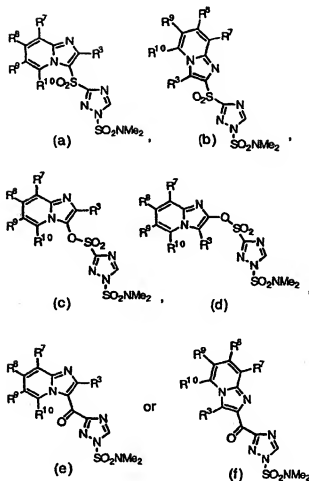
Table 9(continuation)

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>	R <sup>6</sup>
9-69	SMe	SMe	H	H	H	H
9-70	SMe	CO <sub>2</sub> Me	H	H	H	H
9-71	CN	H	H	H	H	H
9-72	CN	Me	H	H	H	H
9-73	CN	Et	H	H	H	H
9-74	CN	CN	H	H	H	H
9-75	CN	CF <sub>3</sub>	H	H	H	H
9-76	CN	Cl	H	H	H	H
9-77	CN	Br	H	H	H	H
9-78	CN	NO <sub>2</sub>	H	H	H	H
9-79	CN	SMe	H	H	H	H
9-80	CN	CO <sub>2</sub> Me	H	H	H	H
9-81	Me	H	Me	H	H	H
9-82	Me	H	H	Me	H	H
9-83	Me	H	H	H	Me	H
9-84	Me	H	H	H	H	Me
9-85	Me	H	F	H	H	H
9-86	Me	H	H	F	H	H
9-87	Me	H	H	H	F	H
9-88	Me	H	H	H	H	F
9-89	Me	H	Cl	H	H	H
9-90	Me	H	H	Cl	H	H
9-91	Me	H	H	H	Cl	H
9-92	Me	H	H	H	H	Cl
9-93	Me	H	Br	H	H	H
9-94	Me	H	H	Br	H	H
9-95	Me	H	H	H	Br	H
9-96	Me	H	H	H	H	Br
9-97	Me	Cl	Me	H	H	H
9-98	Me	Cl	H	Me	H	H
9-99	Me	Cl	H	H	Me	H
9-100	Me	Cl	H	H	H	Me
9-101	Me	Cl	F	H	H	H
9-102	Me	Cl	H	F	H	H
9-103	Me	Cl	H	H	F	H
9-104	Me	Cl	H	H	H	F
9-105	Me	Cl	Cl	H	H	H
9-106	Me	Cl	H	Cl	H	H
9-107	Me	Cl	H	H	Cl	H
9-108	Me	Cl	H	H	H	Cl
9-109	Me	Cl	Br	H	H	H
9-110	Me	Cl	H	Br	H	H
9-111	Me	Cl	H	H	Br	H
9-112	Me	Cl	H	H	H	Br
9-113	Me	Br	Me	H	H	H
9-114	Me	Br	H	Me	H	H

Tabl 9(continue)

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>	R <sup>6</sup>
9-115	Me	Br	H	H	Me	H
9-116	Me	Br	H	H	H	Me
9-117	Me	Br	F	H	H	H
9-118	Me	Br	H	F	H	H
9-119	Me	Br	H	H	F	H
9-120	Me	Br	H	H	H	F
9-121	Me	Br	Cl	H	H	H
9-122	Me	Br	H	Cl	H	H
9-123	Me	Br	H	H	Cl	H
9-124	Me	Br	H	H	H	Cl
9-125	Me	Br	Br	H	H	H
9-126	Me	Br	H	Br	H	H
9-127	Me	Br	H	H	Br	H
9-128	Me	Br	H	H	H	Br

Table 10



Compound No.	R <sup>3</sup>	R <sup>7</sup>	R <sup>8</sup>	R <sup>9</sup>	R <sup>10</sup>
10-1	H	H	H	H	H
10-2	Me	H	H	H	H
10-3	Et	H	H	H	H
10-4	n-Pr	H	H	H	H
10-5	Cl	H	H	H	H
10-6	Br	H	H	H	H
10-7	Sme	H	H	H	H
10-8	CF <sub>3</sub>	H	H	H	H

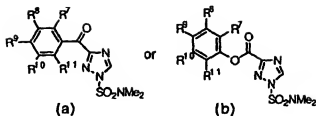
Table 10(continue)

Compound No.	R <sup>3</sup>	R <sup>7</sup>	R <sup>8</sup>	R <sup>9</sup>	R <sup>10</sup>
10-9	CN	H	H	H	H
10-10	H	Me	H	H	H
10-11	H	H	Me	H	H
10-12	H	H	H	Me	H
10-13	H	H	H	H	Me
10-14	H	F	H	H	H
10-15	H	H	F	H	H
10-16	H	H	H	F	H
10-17	H	H	H	H	F
10-18	H	Cl	H	H	H
10-19	H	H	Cl	H	H
10-20	H	H	H	Cl	H
10-21	H	H	H	H	Cl
10-22	H	Br	H	H	H
10-23	H	H	Br	H	H
10-24	H	H	H	Br	H
10-25	H	H	H	H	Br
10-26	Me	Me	H	H	H
10-27	Me	H	Me	H	H
10-28	Me	H	H	Me	H
10-29	Me	H	H	H	Me
10-30	Me	F	H	H	H
10-31	Me	H	F	H	H
10-32	Me	H	H	F	H
10-33	Me	H	H	H	F
10-34	Me	Cl	H	H	H
10-35	Me	H	Cl	H	H
10-36	Me	H	H	Cl	H
10-37	Me	H	H	H	Cl
10-38	Me	Br	H	H	H
10-39	Me	H	Br	H	H
10-40	Me	H	H	Br	H
10-41	Me	H	H	H	Br
10-42	Et	Me	H	H	H
10-43	Et	H	Me	H	H
10-44	Et	H	H	Me	H
10-45	Et	H	H	H	Me
10-46	Et	F	H	H	H
10-47	Et	H	F	H	H
10-48	Et	H	H	F	H
10-49	Et	H	H	H	F
10-50	Et	Cl	H	H	H
10-51	Et	H	Cl	H	H
10-52	Et	H	H	Cl	H
10-53	Et	H	H	H	Cl
10-54	Et	Br	H	H	H

Tabl 10(continu )					
Compound No.	R <sup>3</sup>	R <sup>7</sup>	R <sup>8</sup>	R <sup>9</sup>	R <sup>10</sup>
10-55	Et	H	Br	H	H
10-56	Et	H	H	Br	H
10-57	Et	H	H	H	Br
10-58	Cl	Me	H	H	H
10-59	Cl	H	Me	H	H
10-60	Cl	H	H	Me	H
10-61	Cl	H	H	H	Me
10-62	Cl	F	H	H	H
10-63	Cl	H	F	H	H
10-64	Cl	H	H	F	H
10-65	Cl	H	H	H	F
10-66	Cl	Cl	H	H	H
10-67	Cl	H	Cl	H	H
10-68	Cl	H	H	Cl	H
10-69	Cl	H	H	H	Cl
10-70	Cl	Br	H	H	H
10-71	Cl	H	Br	H	H
10-72	Cl	H	H	Br	H
10-73	Cl	H	H	H	Br
10-74	Br	Me	H	H	H
10-75	Br	H	Me	H	H
10-76	Br	H	H	Me	H
10-77	Br	H	H	H	Me
10-78	Br	F	H	H	H
10-79	Br	H	F	H	H
10-80	Br	H	H	F	H
10-81	Br	H	H	H	F
10-82	Br	Cl	H	H	H
10-83	Br	H	Cl	H	H
10-84	Br	H	H	Cl	H
10-85	Br	H	H	H	Cl
10-86	Br	Br	H	H	H
10-87	Br	H	Br	H	H
10-88	Br	H	H	Br	H
10-89	Br	H	H	H	Br



Table 11



Compound No.	R <sup>1</sup>	R <sup>4</sup>	R <sup>5</sup>	R <sup>10</sup>	R <sup>11</sup>
11-1	H	H	H	H	H
11-2	Me	H	H	H	H
11-3	H	Me	H	H	H
11-4	H	H	Me	H	H
11-5	Et	H	H	H	H
11-6	H	Et	H	H	H
11-7	H	H	Et	H	H
11-8	F	H	H	H	H
11-9	H	F	H	H	H
11-10	H	H	F	H	H
11-11	Cl	H	H	H	H
11-12	H	Cl	H	H	H
11-13	H	H	Cl	H	H
11-14	Br	H	H	H	H
11-15	H	Br	H	H	H
11-16	H	H	Br	H	H
11-17	CF <sub>3</sub>	H	H	H	H
11-18	H	CF <sub>3</sub>	H	H	H
11-19	H	H	CF <sub>3</sub>	H	H
11-20	OCF <sub>3</sub>	H	H	H	H
11-21	H	OCF <sub>3</sub>	H	H	H
11-22	H	H	OCF <sub>3</sub>	H	H
11-23	Ph	H	H	H	H
11-24	H	Ph	H	H	H
11-25	H	H	Ph	H	H
11-26	Oph	H	H	H	H
11-27	H	Oph	H	H	H
11-28	H	H	Oph	H	H
11-29	Bn	H	H	H	H
11-30	H	Bn	H	H	H
11-31	H	H	Bn	H	H
11-32	CO <sub>2</sub> Me	H	H	H	H
11-33	H	CO <sub>2</sub> Me	H	H	H

Table 11(Continue)

Compound No.	R <sup>7</sup>	R <sup>8</sup>	R <sup>9</sup>	R <sup>10</sup>	R <sup>11</sup>
11-34	H	H	CO <sub>2</sub> Me	H	H
11-35	CN	H	H	H	H
11-36	H	CN	H	H	H
11-37	H	H	CN	H	H
11-38	NO <sub>2</sub>	H	H	H	H
11-39	H	NO <sub>2</sub>	H	H	H
11-40	H	H	NO <sub>2</sub>	H	H
11-41	Ome	H	H	H	H
11-42	H	OMe	H	H	H
11-43	H	H	OMe	H	H
11-44	Me	Cl	H	H	H
11-45	Me	H	Cl	H	H
11-46	Me	H	H	Cl	H
11-47	Me	H	H	H	Cl
11-48	Cl	Me	H	H	H
11-49	H	Me	Cl	H	H
11-50	H	Me	H	Cl	H
11-51	H	Me	H	H	Cl
11-52	Cl	H	Me	H	H
11-53	H	Cl	Me	H	H
11-54	Me	Me	H	H	H
11-55	Me	H	Me	H	H
11-56	Me	H	H	Me	H
11-57	Me	H	H	H	Me
11-58	H	Me	Me	H	H
11-59	H	Me	H	Me	H
11-60	Cl	Cl	H	H	H
11-61	Cl	H	Cl	H	H
11-62	Cl	H	H	Cl	H
11-63	Cl	H	H	H	Cl
11-64	H	Cl	Cl	H	H
11-65	H	Cl	H	Cl	H

Next, methods for preparing the compound of the invention will be explained below. However, the present invention should not be construed as being limited thereto.

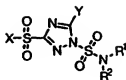
(Preparation Method 1)

The compound of the invention can be prepared by reacting a compound of the formula (2)

A-H

(2)

wherein A has the same meaning as defined above, with a compound of the formula (3)



wherein  $R^1$ ,  $R^2$  and Y have the same meanings as defined above, and X is halogen.

(Preparation Method 2)

[0121] The compound of the invention can be prepared by reacting a compound of the formula (4)



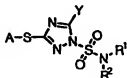
wherein B and Y have the same meanings as defined above, with a compound of the formula (5)



wherein  $R^1$  and  $R^2$  have the same meanings as defined above and X is halogen.

(Preparation Method 3)

[0122] The compound of the invention can be prepared by oxidizing a compound of the formula (6)



wherein  $R^1$ ,  $R^2$ , A and Y have the same meanings as defined above, with an oxidizing agent.

[0123] In (Preparation Method 1), a sulfamoyl derivative (1) can be synthesized by reacting (2) with a halosulfonyl-triazole (3) in the presence of a base.

[0124] The solvent may be any solvent so far as it is inert to the reaction. There may be employed, for example, ethers such as dioxane, dimethoxyethane and tetrahydrofuran, aromatic hydrocarbons such as toluene, xylene and chlorobenzene, halogenated hydrocarbons such as dichloroethane and chloroform, ketones such as acetone, methyl ethyl ketone and methyl isobutyl ketone, nitriles such as acetonitrile, tertiary amines such as pyridine, triethylamine and tributylamine, amides such as N,N-dimethylformamide, sulfur compounds such as dimethyl sulfoxide and sulfolane, nitro compounds such as nitroethane and nitrobenzene, esters such as methyl acetate, or mixtures thereof. The reaction can be performed at a reaction temperature from  $-78^\circ\text{C}$  to the boiling point of the solvent.

[0125] As for the base, there may be employed, for example, organic bases such as pyridine, 4-dimethylaminopyridine, triethylamine, diethylisopropylamine and N,N-diethylaniline, inorganic bases such as sodium hydroxide, potassium hydroxide, sodium carbonate, potassium carbonate, sodium hydrogen carbonate and potassium hydrogen carbonate, metal hydrides such as sodium hydride, metal alkoxides such as sodium methoxide and potassium t-butoxide, organic metal amides such as lithium diisopropylamide, organic metal compounds such as n-butyl lithium, and the like.

[0126] In the (Preparation Method 2), the sulfamoyl derivative (1) can be synthesized by reacting (4) with a dialkyl-sulfamoyl halide (5) in the presence of a base.

[0127] The solvent may be any solvent so far as it is inert to the reaction. There may be employed, for example, ethers such as dioxane, dimethoxyethane and tetrahydrofuran, aromatic hydrocarbons such as toluene, xylene and chlorobenzene, halogenated hydrocarbons such as dichloroethane and chloroform, ketones such as acetone, methyl ethyl ketone and methyl isobutyl ketone, nitriles such as acetonitrile, tertiary amines such as pyridine, triethylamine and tributylamine, amides such as N,N-dimethylformamide, sulfur compounds such as dimethyl sulfoxide and sulfone, nitro compounds such as nitroethane and nitrobenzene, esters such as methyl acetate, or mixtures thereof. The reaction can be performed at a reaction temperature from -78°C to the boiling point of the solvent.

[0128] As for the base, there may be employed, for example, organic bases such as pyridine, 4-dimethylaminopyridine, triethylamine, diethylisopropylamine and N,N-diethylaniline, inorganic bases such as sodium hydroxide, potassium hydroxide, sodium carbonate, potassium carbonate, sodium hydrogen carbonate and potassium hydrogen carbonate, metal hydrides such as sodium hydride, metal alkoxides such as sodium methoxide and potassium t-butoxide, organic metal amides such as lithium diisopropylamide, organic metal compounds such as n-butyl lithium, and the like.

[0129] In the (Preparation Method 3), the sulfamoyl derivative (1) can be synthesized by oxidizing (6) with an oxidizing agent.

[0130] The solvent may be any solvent so far as it is inert to the reaction. There may be employed, for example, ethers such as dioxane, dimethoxyethane and tetrahydrofuran, aromatic hydrocarbons such as toluene, xylene and chlorobenzene, halogenated hydrocarbons such as dichloroethane and chloroform, ketones such as acetone, methyl ethyl ketone and methyl isobutyl ketone, nitriles such as acetonitrile, amides such as N,N-dimethylformamide, esters such as ethyl acetate, carboxylic acids such as acetic acid, water, or mixtures thereof. The reaction can be performed at a reaction temperature from -78°C to the boiling point of the solvent.

[0131] As for the oxidizing agent, there may be employed, for example, peroxides such as hydrogen peroxide, peracetic acid, 3-chloro perbenzoic acid, sodium percarbonate, and the like.

[0132] The starting compounds of the method, compounds (2), (3), (4) and (6) can be readily synthesized by known methods (see Dai Yuki Kagaku vol. 14, 299-514 for the compound (2), JP-A-5-43557 and/or JP-A-7-215971 for the compound (3), Chem. Pharm. Bull. 41(7) 1226-1231 (1993) for the compound (4), and JP-A-9-143181 for the compound (6), or methods analogous thereto.

[0133] As for the plant diseases which are target for control by the compound of the invention, there may be mentioned: rice blast (*Pyricularia oryzae*), helminthosporium leaf spot (*Cochliobolus miyabeanus*), sheath blight (*Phenocotia solani*), barley and wheat: powdery mildew (*Erysiphe graminis* f. sp. hordei, f. sp. tritici), stripe (*Pyrenophora graminea*), net blotch (*Pyrenophora teres*), scab (*Gibberella zeae*), rust (*Puccinia striiformis*, *P. graminis*, *P. recondita*, *P. hordei*), snow blight (*Tipula* sp., *Microneoctria nivalis*), loose smut (*Ustilago tritici*, *U. nuda*), eye spot (*Pseudocercospora herpeticoides*), scald (*Rhynchosporium secalis*), speckled leaf blotch (*Septoria tritici*), glume blotch (*Leptosphaeria nodorum*), citrus: melanose (*Diaporthe citri*), scab (*Elsinoe fawcettii*), green mold and blue mold (*Penicillium digitalum*, *P. italicum*), apple: blossom blight (*Sclerotinia mali*), canker (*Valsa mali*), powdery mildew (*Podosphaera lenticularis*), alternaria leaf spot (*Alternaria mali*), scab (*Venturia inaequalis*), pear: scab (*Venturia nashicola*), black spot (*Alternaria kikuchiana*), rust (*Gymnosporangium haracanum*), peach: brown rot (*Sclerotinia cinerea*), scab (*Cladosporium carpophilum*), rhombus rot (*Phomopsis* sp.), grape: downy mildew (*Plasmopara viticola*), anthracnose (*Elsinoe ampelina*), ripe rot (*Glomerella cingulata*), powdery mildew (*Uncinula necator*), rust (*Phakopsora ampelopsidis*), kaki: anthracnose (*Gloeosporium kaki*), angular leaf spot and circular leaf spot (*Cercospora kaki*, *Mycosphaera nawae*), melons: downy mildew (*Pseudoperonospora cubensis*), anthracnose (*Colletotrichum lagenarium*), powdery mildew (*Sphaerotheca fuliginea*), gummy stem blight (*Mycosphaerella melonis*), tomato: late blight (*Phytophthora infestans*), early blight (*Alternaria solani*), leaf mold (*Cladosporium fulvum*), egg plant: brown spot (*Phomopsis vexans*), powdery mildew (*Erysiphe cichoracearum*), rape: black rot (*Alternaria japonica*), white rot (*Cercospora brassicae*), onion: rust (*Puccinia allii*), soybean: purple stain of seed (*Cercospora kikuchii*), sphaceloma scab (*Elsinoe glycines*), black spot (*Diaporthe phaseolotum*), kidney bean: anthracnose (*Colletotrichum lindemuthianum*), peanut: leaf spot (*Mycosphaerella personatum*), brown leaf spot (*Cercospora arachidicola*), pea: powdery mildew (*Erysiphe pisi*), potato: late blight (*Alternaria solani*), strawberry: powdery mildew (*Sphaerotheca humuli*), tea plant: net blister blast (*Exobasidium reticulatum*), white scab (*Elsinoe leucospila*), tobacco: brown spot (*Alternaria lingipis*), powdery mildew (*Erysiphe cichoracearum*), anthracnose (*Colletotrichum tabacum*), beet: cercospora leaf (*Cercospora beticola*), rose: black spot (*Diplocarpon rosae*), powdery mildew (*Sphaerotheca pannosa*), chrysanthemum: leaf spot (*Septoria chrysanthemifolii*), rust (*Puccinia horiana*), various crops: gray mold (*Botrytis cinerea*), various crops: sclerotinia rot (*Sclerotinia sclerotiorum*), and the like.

[0134] Upon use of the compound of the invention as agricultural and horticultural fungicides, they are generally mixed with a suitable carrier, for example, solid carriers such as clay, talc, bentonite and diatomaceous earth, or liquid carriers such as water, alcohols (methanol, ethanol, etc.), aromatic hydrocarbons (benzene, toluene, methyl-naphthalene, etc.), chlorinated hydrocarbons, ethers, ketones, esters (ethylacetate, etc.), acid amides (dimethylformamide, etc.), or the like to be applied. If desired, emulsifying agents, dispersants, suspension agents, penetrating agents,

spreading agents, stabilizers and the like may be added so that the compounds can be subjected to practical application in any of formulation forms such as liquid formulation, emulsifiable concentrate, wettable powder, dust formulation, granule, or flowable powder.

[0135] The compound of the invention can be mixed or used in combination with various active compounds such as fungicides, bactericides, acaricides, nematocides and insecticides or other biologically active compounds. Common names of these active compounds will be listed below concretely. However, the invention should not be construed as being limited thereto.

[0136] Fungicidally active compounds: acbenzazole, ampropyros, anilazine, azacanzole, azoxystrobin, benalaxyl, benodanil, benomyl, benzcarbamyl, binapacryl, biphenyl, bitertanol, bethoxazole, bordeaux mixture, blastidicin-S, bromoconazole, bupirimate, buthicate, calcium polysulfide, captfol, captan, copper oxychloride, carpropamid, carbendazim, carboxin, chinomethionat, chlorobenzothiazole, chlorfenazol, chloroneb, chlorothalonil, chlorzinatol, clufanab, cymoxanil, cyproconazole, cyprodinil, cyprothiuron, decabarb, dichlorophen, dichlobutrazol, dichlofluanid, dichloromede, dichloran, diflufenicarb, dichloxyfate, difenoconazole, diflumetruor, dimethirimol, dimethomorph, diniconazole, diniconazole-M, dinocap, diphenylamine, dipyrithione, ditalimols, dithianon, dodemorph, dodine, drazaolxon, edifenphos, epoxiconazole, etaconazole, etirimol, etridiazole, famoxadone, fenarimol, febuconazole, fenfuram, fenpicodan, fenpropidin, fenpropimorph, fentin, ferbam, ferimidon, fluazinam, fludioxonil, fluoroimidazole, fluquinconazole, flusilazole, flusulfamid, flutolanil, flutriafol, tolpel, fosetyl-aluminium, fuberidazole, furaxaly, fenamidone, fenbexamid, guazatine, hexachlorobenzene, hexaconazole, hymexazol, imazali, imbenconazole, iminodactin, ipconazole, iprobenfos, iprodione, iprodione, isoprothiolane, iprovalicarb, kasugamycin, kresoxim-methyl, mancopter, mancozeb, maneb, manepimpyr, mepronil, metaxalay, metconazole, metiram, metominostrobin, myclobutanil, nabam, nickel bis(dimethylthiobarbimate), nitrothal-isopropyl, nuralomil, ochlithione, ofurace, oxadixyl, oxycarboxin, oxpoconazole fumarate, pefurtozate, penconazole, pencycuron, phthalide, piperiln, polyoxins, probenazole, prochloraz, procymidone, propamocarb hydrochloride, propiconazole, propineb, pyrazophos, pyrifenoxy, pyrimethanil, pyroquilon, oxicyfofen, quintozone, sulfur, spiroxamine, tebuconazole, tecnazene, tetraconazole, thiabendazole, thifluzamide, thiophanate-methyl, thiram, tolclofos-methyl, tolylfluanid, triadimfomol, toriadimerol, triazoxazole, tricyclazole, tridemorph, triflumizole, triflorine, triticoazole, validamycin, vindozolin, zineb, ziram.

[0137] Bactericidally active compounds: streptomycin, oxytetracycline, oxolinic acid.

[0138] Nematicidally active compounds: aldoxycarb, fosthiazate, fosthietan, oxamyl, fenamiphos.

[0139] Acaricidally active compounds: amitraz, bromopropylate, chinomethionat, chlorobenzilate, clocfentazine, cyhexatine, dicofol, dienochlor, ethoxazole, fenazaquin, fenbutatin oxide, fenpropathrin, fenproximate, halfenprox, hexythiazox, milbemectin, propargite, pyridaben, pyrimidifen, tebufenpyrad.

[illegible]

[0141] When used as agricultural and horticultural fungicides, the compounds of the invention can be applied by foliage application, soil treatment, seed disinfection and the like. They are also effective in general methods usually utilized by those skilled in the art.

[0142] Further, if necessary, other herbicides, and various insecticides, fungicides, plant growth regulators, synergists and the like may be mixed at formulation or spraying and used together. An application rate of the compound of the invention varies due to an application field, an application period, an application method, a target disease, a cultured crop and the like, but generally it is suitable to apply about 0.005 - 50 kg of the active ingredient per hectare.

[0143] Next, formulation examples of fungicides containing the compound of the invention as active ingredients are shown as follows. However, the present invention should not be construed as being limited thereto. In the following formulation examples, all "parts" means are "parts by weight".

Formulation Example 1      Emulsifiable Concentrate		
5	Compound of the invention	20 parts
	Methylnaphthalene	55 parts
	Cyclohexanone	20 parts
10	Sorpol 2680 (mixture of nonionic surfactant and anionic surfactant: Toho Kagaku Kogyo K.K., trade name)	5 parts

[0144] The above components are mixed uniformly to make an emulsion. Upon use, the emulsion is diluted by 50 - 20,000 times to apply 0.005 - 50 kg of the active ingredient per hectare.

Formulation Example 2      Wettable Powder		
20	Compound of the invention	25 parts
	Zeeklite PEP (mixture of kaolinite and celisite: Zeeklite Industry K.K., Ltd.)	66 parts
	Solpol 5039 (anionic surfactant: Toho Kagaku Kogyo K.K., trade name)	4 parts
25	Carplex #80 (white carbon: Shionogi Seiyaku K.K., trade name)	3 parts
	Calcium ligninsulfonate	2 parts

[0145] The above components are mixed and grounded uniformly to make a wettable powder. Upon use, the wettable powder is diluted to 50 to 20,000 times to spray 0.005 to 50 kg of active ingredient per hectare.

Formulation Example 3      Dust Formulation		
35	Compound of the invention	3 parts
	Carplex #80 (white carbon: Shionogi Seiyaku K.K., trade name)	0.5 part
	Clay	95 parts
40	Diisopropyl phosphate	1.5 parts

[0146] The above components are mixed and grounded uniformly to make a dust formulation. Upon use, the dust formulation is applied with 0.005 to 50 kg of active ingredient per hectare.

Formulation Example 4      Granule		
50	Compound of the invention	5 parts
	Bentonite	30 parts
	Talc	64 parts
55	Calcium ligninsulfonate	1 part

[0147] The above components are mixed and grounded uniformly, stirred to mix with addition of a small amount of water, granulated by an extrusion granulator and dried to make a granule. Upon use, the granule is applied with 0.005

to 50 kg of active ingredient per hectare.

Formulation Example 5	Flowable Powder
Compound of the invention	25 parts
Solpol 3353 (nonionic surfactant: Toho Kagaku Kogyo K.K., trade name)	5 parts
Lunox 1000C (anionic surfactant: Toho Kagaku Kogyo K.K., trade name)	0.5 part
Xanthan gum (natural polymer)	0.2 part
Sodium benzoate	0.4 part
Propylene glycol	10 parts
Water	58.9 parts

[0148] The above components except for the active ingredient (the compound of the invention) are dissolved uniformly, to which the compound of the invention is added, stirred well, and thereafter water-grounded in a sand mill to obtain a flowable powder. Upon use, the flowable powder is diluted by 50 - 20,000 times to apply 0.005 - 50 kg of the active ingredient per hectare.

#### BEST MODE FOR CARRYING OUT THE INVENTION

[0149] Next, the present invention will be explained concretely by examples. However, the present invention should not be construed as being limited thereto.

##### Example 1

Preparation of 1-(N,N-dimethylsulfamoyl)-3-(2-methyl-3-chloroindol-1-yl)sulfonyl-1,2,4-triazole (1-33(a))

[0150] 0.6 g of 2-methyl-3-chloroindole was dissolved in 20 ml of tetrahydrofuran, and 0.17 g of sodium hydride (55% or more) was added thereto with stirring under ice-cooling. After stirring at room temperature for 1 hour, the solution was ice-cooled again and 1.0 g of 1-N,N-dimethylsulfamoyl-3-chlorosulfonyl-1,2,4-triazole was added, and then the mixture was stirred at room temperature for 3 hours. After completion of the reaction, diluted hydrochloric acid was added and the reaction mixture was extracted with ethyl acetate. After distilling off the solvent, the residue was purified by column chromatography to obtain 0.73 g of the titled compound.

##### Example 2

Preparation of 1-(N,N-dimethylsulfamoyl)-3-(3-chloroindazol-1-yl)sulfonyl-1,2,4-triazole (7-5(a))

[0151] 0.5 g of 3-chloroindazole was dissolved in 20 ml of tetrahydrofuran, and 0.4 g of triethylamine was added thereto with stirring under ice-cooling. Thereafter, 0.94 g of 1-N,N-dimethylsulfamoyl-3-chlorosulfonyl-1,2,4-triazole was added, and then the mixture was stirred at room temperature for 16 hours. After completion of the reaction, the reaction mixture was neutralized with diluted hydrochloric acid, and extracted with ethyl acetate. After distilling off the solvent, the residue was purified by column chromatography to obtain 0.94 g of the titled compound.

##### Example 3

Preparation of 1-(N,N-dimethylsulfamoyl)-3-(3-phenyl-4-chloro-5-methylpyrazol-1-yl)sulfonyl-1,2,4-triazole (8-11(a))

[0152] 0.56 g of 3-phenyl-4-chloro-5-methylpyrazole was dissolved in 20 ml of tetrahydrofuran, and 0.47 g of triethylamine was added thereto with stirring under ice-cooling. Thereafter, 0.8 g of 1-N,N-dimethylsulfamoyl-3-chlorosulfonyl-1,2,4-triazole was added, and then the mixture was stirred at room temperature for 16 hours. After completion of the reaction, the reaction mixture was neutralized with diluted hydrochloric acid, and extracted with ethyl acetate. After distilling off the solvent, the residue was purified by column chromatography to obtain 1.04 g of the titled compound.

## Example 4

Preparation of 1-dimethylsulfamoyl-3-(4-trifluoromethylbenzoyl)-1,2,4-triazole (11-19(a))

[0153] 0.31 g of 3-(4-trifluoromethylbenzoyl)-1,2,4-triazole was dissolved in 3 ml of DMF, 0.21 g of potassium carbonate was added thereto, and then 0.22 g of dimethylsulfamoyl chloride was added at room temperature with stirring. After stirring the reaction mixture for 1.5 hours at room temperature, water was added to precipitate crystals, and the crystals were collected by filtration and washed with diethyl ether. Drying of the mixture under reducing pressure afforded 0.31 g of the titled compound.

## Example 5

Preparation of 1-dimethylsulfamoyl-3-(2-methylimidazo[1,2-a]pyridin-3-ylsulfonyl)-1,2,4-triazole (10-2(a))

[0154] 1.2 g of 1-dimethylsulfamoyl-3-(2-methylimidazo[1,2-a]pyridin-3-ylsulfonyl)-1,2,4-triazole was dissolved in a mixture of 20 ml of acetonitrile and 20 ml of water, and 3.0 g of sodium percarbonate was added thereto at room temperature. After stirring the mixture for 1 hour at room temperature, additional 3.0 g of sodium percarbonate was added. After completion of the reaction, the reaction mixture was neutralized with diluted hydrochloric acid and extracted with ethyl acetate. After distilling off the solvent, the residue was purified by column chromatography to obtain 0.3 g of the titled compound.

[0155] Next, the physical properties of the compounds of the formula (1) prepared according to these methods are shown in Table 12.



Table 12

Compound No.	Property (m.p. °C)
1-1(a)	98-100
1-2(a)	74-76
1-3(a)	70-72
1-4(a)	70-72
1-9(a)	136-139
1-10(a)	118-121
1-11(a)	138-139
1-12(a)	138-139
1-13(a)	96-98
1-14(a)	Oil
1-20(a)	125-126
1-21(a)	120-122
1-22(a)	118-121
1-23(a)	78-79
1-26(a)	141-142.5
1-27(a)	60-61
1-31(a)	158-161
1-32(a)	145.5-146.5
1-33(a)	120-122
1-34(a)	81-82
1-35(a)	71-72
1-38(a)	128-129
1-41(a)	151-154
1-42(a)	140-141
1-42(i)	Oil
1-42(k)	142-145
1-42(l)	167.5-171
1-43(a)	118.5-120
1-44(a)	149-150
1-45(a)	Oil
1-50(a)	124-126
1-51(a)	181-182
1-56(a)	94-95
1-57(a)	61-63
1-62(a)	147.5-149
1-63(a)	134.5-136
1-71(a)	159-159.5
1-72(a)	104-107

Table 12(continue)

Compound No.	Property (m.p. °C)
1-81(a)	163-165
1-105(a)	135-137
1-118(a)	137-140
1-119(a)	139-140
1-125(a)	129-131
1-126(a)	119-121
1-130(a)	142-145
1-131(a)	128-129
1-133(a)	113-115
1-135(a)	80-81
1-136(c)	134.5-135.5
1-148(a)	112-113
1-152(a)	120-122
1-161(a)	Oil
1-163(a)	134.5-136
1-168(a)	138-139.5
1-187(a)	172-174
1-188(a)	166-168
1-211(a)	94-95
1-222(a)	126-127
1-232(a)	172-174
1-233(a)	164-165
1-243(a)	Oil
1-258(a)	125-128
1-265(a)	142-143.5
1-266(a)	114-117
1-276(a)	177.5-179
1-276(j)	87-89
1-277(a)	132-133
1-283(a)	112-113
1-289(a)	138.5-139.5
1-290(a)	142-143
1-298(a)	90-92
1-311(a)	142-143
1-316(a)	65-66.5
1-316(j)	91-92
1-326(a)	82-84
1-343(a)	Oil
1-353(a)	160-163
1-370(a)	Oil
1-378(a)	93-94
1-396(a)	149-151
1-403(a)	129-131
1-414(a)	151.5-153
1-421(a)	107-108.5
1-435(a)	184-186

Table 12(continu )

Compound No.	Property (m.p. °C)
1-440(a)	194.5-195.5
1-445(a)	50-53
1-470(a)	120-122
1-497(a)	119-121
1-508(a)	148-150
1-518(a)	Oil
1-537(a)	153-155
1-548(a)	204-206(decomposition)
1-557(a)	Oil
1-568(a)	51-53
2-2(a)	134-135
2-2(b)	160-161
2-2(n)	184-186
2-2(o)	180-181.5
2-3(b)	140.5-142
2-3(n)	151.5-152.5
2-3(o)	162.5-163
2-4(b)	176-180
2-5(a)	143-144
2-5(b)	174-176
2-6(a)	104-105
2-6(d)	141-143
2-6(e)	168-169
2-6(n)	173-175
2-7(a)	117-118
2-7(b)	142-145
2-7(n)	143-144
2-8(b)	177-179
2-8(x)	123-124
2-10(a)	112.5-114
2-10(b)	143-145
2-10(n)	163-164.5
2-10(v)	138-141
2-11(a)	149-150.5
2-14(a)	85.5-87
2-14(b)	150.5-153
2-17(a)	145-147
2-17(b)	181-183
2-18(a)	86-87
2-18(b)	134-136
2-19(a)	82-83
2-19(b)	136-138
2-20(a)	109-110
2-20(b)	148-149
2-24(a)	61-63
2-24(b)	81-83

Table 12(continue)

Compound No.	Property (m.p. °C)
2-26(a)	126.5-127.5
2-30(a)	177-179
2-30(b)	174-176
2-34(a)	156-157
2-34(b)	181-183
2-39(e)	126-128
2-44(b)	162-163
3-1(a)	160-162
5-1(a)	115-118
5-22(a)	Oil
5-23(a)	39-42
5-34(a)	55-58(decomposition)
5-58(a)	44-47
5-82(a)	121-123
5-146(a)	182-184
5-146(h)	145.5-147.5
5-153(a)	139-140
5-165(a)	128-129.5
5-227(a)	42-45
5-234(a)	Oil
5-247(a)	Oil
5-254(a)	68-70
5-254(h)	Oil
5-261(a)	151-154
5-274(a)	173-176
5-490(a)	126-129
5-495(a)	149-150.5
5-506(a)	145-147
6-6(a)	163.5-164.5
6-30(a)	54-56
7-1(a), (b)	135-137(mixture)
7-2(e)	135-136
7-5(a)	164-165
8-1(a)	154.5-155.5
8-10(a)	110.5-111
8-11(a)	125-128
10-2(a)	179.5-181
11-1(a)	81-82
11-17(a)	89-91
11-18(a)	62-63
11-19(a)	121-122
11-24(a)	133-135

[0156] Usefulness of the compound of the invention will be explained concretely by the following test examples. However, the present invention should not be construed as being limited thereto.

## Test Example 1: Test on Cucumber Downy Mildew Controlling Effect

[0157] Cucumber (species: Sagami Hanjiro) grown in a pot having a diameter of 7 cm was applied at 1.5 leaf stage by means of a spray-gun with 20 ml per a pot of agent solution which was prepared by diluting the emulsifiable concentrate of the compound of the invention with water to 500 ppm.

[0158] A day after application, spore suspension of cucumber downy mildew pathogen (*Pseudoperonospora cubensis*) ( $2 \times 10^5$  /ml) was sprayed for inoculation. Inoculated cucumber was placed in an inoculation box at a temperature of 25°C and a humidity of 95 % or more for one day and night. Thereafter, the cucumber was placed in a greenhouse and determined a ratio of disease spot area formed after 7 days from inoculation to inoculated leaves to calculate a control value according to the following equation:

$$\text{control value} = [1 - (\text{disease spot area proportion in treated part} / \text{disease spot area proportion in non-treated part})] \times 100$$

[0159] As a result, the following compounds showed a controlling value of 100.

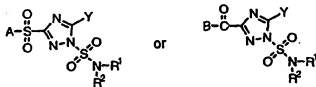
[0160] The compound of the invention No.: 1-1(a), 1-2(a), 1-3(a), 1-4(a), 1-9(a), 1-10(a), 1-11(a), 1-12(a), 1-13(a), 1-14(a), 1-20(a), 1-21(a), 1-22(a), 1-23(a), 1-32(a), 1-33(a), 1-34(a), 1-35(a), 1-38(a), 1-41(a), 1-42(a), 1-43(a), 1-44(a), 1-45(a), 1-50(a), 1-51(a), 1-56(a), 1-62(a), 1-63(a), 1-71(a), 1-72(a), 1-81(a), 1-105(a), 1-118(a), 1-119(a), 1-125(a), 1-126(a), 1-130(a), 1-131(a), 1-133(a), 1-135(a), 1-136(c), 1-148(a), 1-152(a), 1-161(a), 1-163(a), 1-168(a), 1-187(a), 1-188(a), 1-211(a), 1-222(a), 1-232(a), 1-233(a), 1-243(a), 1-258(a), 1-265(a), 1-266(a), 1-276(a), 1-277(a), 1-283(a), 1-289(a), 1-290(a), 1-298(a), 1-311(a), 1-316(a), 1-326(a), 1-343(a), 1-353(a), 1-370(a), 1-378(a), 1-396(a), 1-403(a), 1-414(a), 1-421(a), 1-435(a), 1-440(a), 1-445(a), 1-470(a), 1-497(a), 1-508(a), 1-518(a), 1-537(a), 1-548(a), 1-568(a), 2-2(a), 2-2(b), 2-2(n), 2-2(o), 2-3(b), 2-3(n), 2-3(o), 2-4(b), 2-5(a), 2-5(b), 2-6(a), 2-6(d), 2-6(e), 2-6(n), 2-7(a), 2-7(b), 2-7(n), 2-8(b), 2-8(x), 2-10(a), 2-10(b), 2-10(n), 2-10(v), 2-11(e), 2-14(a), 2-14(b), 2-17(a), 2-17(b), 2-18(a), 2-18(b), 2-19(a), 2-19(b), 2-20(a), 2-20(b), 2-24(a), 2-24(b), 2-26(a), 2-34(a), 2-34(b), 2-39(e), 2-44(b), 3-1(a), 5-1(a), 5-22(a), 5-23(a), 5-34(a), 5-58(a), 5-82(a), 5-146(a), 5-153(a), 5-165(a), 5-227(a), 5-234(a), 5-247(a), 5-254(a), 5-261(a), 5-274(a), 5-490(a), 5-495(a), 5-506(a), 6-6(a), 6-30(a), 7-1(a), (b), 7-2(e), 7-5(a), 8-1(a), 8-10(a), 8-11(a), 10-2(a), 11-1(a), 11-17(a), 11-18(a), 11-19(a), 11-24(a).

## INDUSTRIAL APPLICABILITY

[0161] These compounds are novel, exhibit excellent agricultural and horticultural fungicidal effect and have no phytotoxicity on useful crops so that they are useful as agricultural and horticultural fungicides.

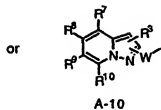
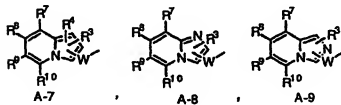
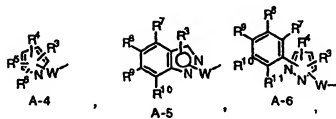
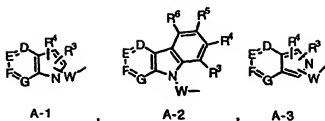
## Claims

1. A sulfamoyl compound of the general formulae (1):



wherein

R<sup>1</sup> and R<sup>2</sup> are each independently C<sub>1-4</sub> alkyl, or R<sup>1</sup> and R<sup>2</sup> together are C<sub>4-6</sub> alkylene or C<sub>4-6</sub> alkyleneoxy, Y is H, halogen, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkoxy, C<sub>1-8</sub> alkylthio, C<sub>1-8</sub> haloalkyl, C<sub>1-8</sub> haloalkoxy or C<sub>1-8</sub> haloalkylthio, A is

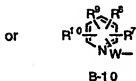
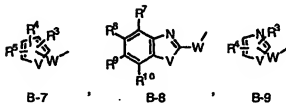
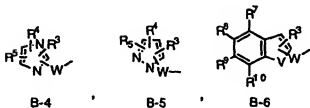
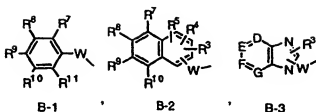


B is A-1 to A-10, or

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W is a chemical bond or O,  
V is O or S.

D, E, F and G are each independently N, CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup> and R<sup>11</sup> are each independently H, C<sub>1-6</sub> alkyl, C<sub>3-6</sub> cycloalkyl, C<sub>2-6</sub> alkenyl, C<sub>5-6</sub> cycloalkenyl, C<sub>2-6</sub> alkynyl, C<sub>1-6</sub> alkoxy, C<sub>3-6</sub> cycloalkoxy, C<sub>5-6</sub> cycloalkenoxy, C<sub>2-6</sub> alkynyloxy, C<sub>2-6</sub> alkymethoxy, C<sub>1-6</sub> alkyldioxy, C<sub>3-6</sub> cycloalkyldioxy, C<sub>5-6</sub> cycloalkenyldioxy, C<sub>2-6</sub> alkenyldioxy, C<sub>1-6</sub> haloalkyl, C<sub>1-6</sub> haloalkoxy, C<sub>1-6</sub> haloalkyloxy, C<sub>1-6</sub> haloalkyldioxy, C<sub>2-6</sub> haloalkenyl, C<sub>2-6</sub> haloalkenyloxy, C<sub>2-6</sub> haloalkenyldioxy, C<sub>2-6</sub> haloalkynyl, C<sub>2-6</sub> haloalkynyloxy, C<sub>2-6</sub> haloalkynyldioxy, phenyl which may be substituted (the kinds of substituent included in benzoyl, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> haloalkyl, C<sub>1-6</sub> alkoxy, C<sub>3-6</sub> haloalkoxy, C<sub>1-6</sub> alkyldioxy, C<sub>1-6</sub> haloalkyldioxy, CN, NO<sub>2</sub> and C<sub>1-6</sub> alkoxyalkaryl), the number of substituents is 1 to 5, and the substituents may be identical or different), phenyl C<sub>1-4</sub> alkyl which may be substituted, benzylthio which may be substituted, benzyloxy which may be substituted, phenoxy C<sub>1-4</sub> alkyl which may be substituted, phenoxy which may be substituted, phenylthio C<sub>1-4</sub> alkyl which may be substituted, phenylthio which may be substituted, benzoyl which may be substituted, benzoyl C<sub>1-4</sub> alkyl which may be substituted, benzoyloxy which may be substituted, benzyloxy C<sub>1-4</sub> alkyl which may be substituted, naphthyl which may be substituted, 5- or 6-membered heterocyclic ring which may be substituted, C<sub>1-6</sub> hydroxylalkyl, C<sub>1-6</sub> hydroxyhaloalkyl, C<sub>1-6</sub> alkoxy C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkoxy C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkythio C<sub>1-4</sub> alkyl, C<sub>1-6</sub> dialkoxy C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylenedioxy C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkyldioxy C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkyldioxy C<sub>1-4</sub> alkyl, C<sub>1-6</sub> dialkylthio C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkyl alkylidene C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkoxycarbonyl, C<sub>1-6</sub> haloalkoxycarbonyl, C<sub>1-6</sub> alkoxyalkoxy, CHO, CO<sub>2</sub>H, C<sub>1-6</sub> alkoxy carbonyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkoxycarbonyl, C<sub>1-6</sub> haloalkoxycarbonyl.

C<sub>1-4</sub> alkyl, NH<sub>2</sub>, C<sub>1-6</sub> alkylamino, C<sub>1-6</sub> alkylcarbonylamino, C<sub>1-6</sub> alkylcarbonylamino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylcarbonylamino, C<sub>1-6</sub> haloalkylcarbonylamino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkoxy carbonylamino, C<sub>1-6</sub> alkoxy carbonylamino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylsulfonfylamino, C<sub>1-6</sub> alkylsulfonfylamino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylsulfonfylamino, C<sub>1-6</sub> haloalkylsulfonfylamino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> dialkylamino, C<sub>1-6</sub> dialkylamino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> dialkylaminocarbonyl, C<sub>1-6</sub> dialkylaminocarbonyl C<sub>1-4</sub> alkyl, C<sub>2-6</sub> alkyleneimino, C<sub>2-6</sub> alkyleneimino C<sub>1-4</sub> alkyl, C<sub>2-6</sub> alkyl neiminocarbonyl, C<sub>2-6</sub> alkyleneiminocarbonyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylcarbonyl, C<sub>1-6</sub> alkylcarbonyloxy, C<sub>1-6</sub> haloalkylcarbonyl, C<sub>1-6</sub> haloalkylcarbonyloxy, C<sub>1-6</sub> alkylcarbonyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylcarbonyloxy C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylcarbonyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylcarbonyloxy C<sub>1-4</sub> alkyl, hydroxyimino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkoxyimino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylcarbonyloxyimino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylsulfonfylloxyimino C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylsulfonfyl, C<sub>1-6</sub> haloalkylsulfonfyl, C<sub>1-6</sub> alkylsulfonfyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylsulfonfyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylsulfonfyl, C<sub>1-6</sub> haloalkylsulfonfyl, C<sub>1-6</sub> alkylsulfonfyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylsulfonfyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkylsulfonfyl, C<sub>1-6</sub> haloalkylsulfonfyl, C<sub>1-6</sub> alkylsulfonfyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkylsulfonfyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> haloalkoxysulfonfyl, C<sub>1-6</sub> haloalkoxysulfonfyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> dialkylsulfamoyl, C<sub>1-6</sub> dialkylsulfamoyl C<sub>1-4</sub> alkyl, C<sub>1-6</sub> alkoxy sulfonfyl, C<sub>1-6</sub> alkoxy sulfonfyl C<sub>1-4</sub> alkyl, C<sub>2-6</sub> cyanoalkyl, CN, C<sub>1-6</sub> thiocarbamoyl, C<sub>1-6</sub> nitroalkyl, NO<sub>2</sub> or halogen, or two of R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup> and R<sup>11</sup> together are C<sub>1-3</sub> alkyleneedioxy which may be substituted, or C<sub>3-6</sub> alkylene.

2. A sulfamoyl compound according to Claim 1, in which A is A-1.
3. A sulfamoyl compound according to claim 1, in which A is A-2.
4. A sulfamoyl compound according to claim 1, in which A is A-3.
5. A sulfamoyl compound according to claim 1, in which A is A-4.
6. A sulfamoyl compound according to claim 1, in which A is A-5 or A-6.
7. A sulfamoyl compound according to claim 1, in which A is A-7 or A-8.
8. A sulfamoyl compound according to claim 1, in which A is A-9 or A-10.
9. A sulfamoyl compound according to claim 1, in which B is B-1.
10. A sulfamoyl compound according to claim 1, in which B is B-2.
11. A sulfamoyl compound according to claim 1, in which B is B-3 or B-4.
12. A sulfamoyl compound according to claim 1, in which B is B-5.
13. A sulfamoyl compound according to claim 1, in which B is B-6 or B-7.
14. A sulfamoyl compound according to claim 1, in which B is B-8 or B-9.
15. A sulfamoyl compound according to claim 1, in which B is B-10.
16. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and R<sup>3</sup> is C<sub>1-6</sub> alkylthio.
17. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and R<sup>3</sup> is C<sub>1-6</sub> alkyl.
18. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and R<sup>3</sup> is C<sub>1-6</sub> haloalkyl.
19. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and R<sup>3</sup> is halogen.
20. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D,



E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and R<sup>3</sup> is H.

21. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and R<sup>3</sup> is CN.
- 5 22. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-2, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and any of R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> is H.
23. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-4, and at least one of R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> is phenyl which may be substituted.
- 10 24. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, and B is B-1.
25. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, R<sup>3</sup> is C<sub>1-8</sub> alkyl, and R<sup>4</sup> is halogen.
- 15 26. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, and any of R<sup>3</sup> and R<sup>4</sup> is halogen.
- 20 27. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, R<sup>3</sup> is C<sub>1-8</sub> alkyl, and R<sup>4</sup> is H or C<sub>1-3</sub> alkyl.
28. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, R<sup>3</sup> is C<sub>1-8</sub> haloalkyl, and R<sup>4</sup> is H, halogen or C<sub>1-3</sub> alkyl.
- 25 29. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, R<sup>3</sup> is H or C<sub>1-8</sub> alkyl, and R<sup>4</sup> is C<sub>1-6</sub> alkoxycarbonyl.
- 30 30. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, R<sup>3</sup> is H, and R<sup>4</sup> is halogen.
31. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, D, E, F and G are CR<sup>7</sup>, CR<sup>8</sup>, CR<sup>9</sup> or CR<sup>10</sup>, R<sup>3</sup> is CN, and R<sup>4</sup> is H or C<sub>1-8</sub> alkyl.
- 35 32. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, any of D, E, F and G is CH, R<sup>3</sup> is C<sub>1-8</sub> alkyl, and R<sup>4</sup> is halogen.
33. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, any of D, E, F and G is CH, and any of R<sup>3</sup> and R<sup>4</sup> is halogen.
- 40 34. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, any of D, E, F and G is CH, R<sup>3</sup> is C<sub>1-8</sub> haloalkyl, and R<sup>4</sup> is H or C<sub>1-3</sub> alkyl.
- 35 35. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, any of D, E, F and G is CH, R<sup>3</sup> is Me or Et, and R<sup>4</sup> is Cl or Br.
- 45 36. A sulfamoyl compound according to claim 1, in which R<sup>1</sup> and R<sup>2</sup> are Me, Y is H, W is a chemical bond, A is A-1, any of D, E, F and G is CH, R<sup>3</sup> is Cl or Br, and R<sup>4</sup> is Cl or Br.
- 50 37. An agricultural chemical containing as the active ingredient at least one sulfamoyl compound according to any one of claims 1 to 36.
38. An agricultural chemical according to claim 37, in which the agricultural chemical is an agricultural and horticultural fungicide.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP98/04808

A. CLASSIFICATION OF SUBJECT MATTER Int. Cl. <sup>7</sup> C07D403/06, 403/12, 471/04, A01N43/653, 84, 90		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) Int. Cl. <sup>7</sup> C07D403/06, 403/12, 471/04, A01N43/653, 84, 90		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CA, REGISTRY (STN)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP, 7-215971, A (Mitsubishi Chemical Corp.), 15 August, 1995 (15. 08. 95), Claims (Family: none)	1-38
Y	JP, 7-2803, A (Mitsubishi Petrochemical Co., Ltd.), 6 January, 1995 (06. 01. 95), Claims (Family: none)	1-38
Y	JP, 6-32785, A (Mitsubishi Petrochemical Co., Ltd.), 8 February, 1994 (08. 02. 94), Claims & WO, 94/01419, A1 & AU, 9345138, A & EP, 603415, A1 & US, 5527818, A	1-38
Y	JP, 63-255269, A (Schering Agrochemicals Ltd.), 21 October, 1988 (21. 10. 88), Full text & EP, 284277, A & AU, 8813318, A & BR, 8801269, A & DK, 8801492, A & FI, 8801321, A & 2A, 8801982, A & PT, 87010, A & CN, 8801622, A & CS, 8801799, A & DD, 284579, A & US, 5045557, A & IL, 85800, A	1-38
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
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Date of the actual completion of the international search 6 January, 1999 (06. 01. 99)	Date of mailing of the international search report 19 January, 1999 (19. 01. 99)	
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International application No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	WO, 97/41113, A1 (Nissan Chemical Industries, Ltd.), 6 November, 1997 (06. 11. 97), Claims & AU, 9724077, A	1, 6, 37, 38

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